County College of Morris

2015 | 2016

Programs and Courses
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Aviation Flight Technology
Associate in Applied Science Degree

The Aviation Flight Technology program provides the course work and flight training necessary for an entry-level flight position. This program is designed to provide students with a broad academic background as well as an opportunity to master the specific requirements of the Commercial Pilot Certificate (Single-Engine Land) with an Instrument Rating, the minimum certificate required to fly as a professional pilot. The mix of course work and flight training courses offers a student the option to continue the process of earning additional ratings and accumulating flight hours at four-year aviation institutions or earning a four-year degree for a position in a related field.

Through this program, pilots interested in earning a college degree can earn college credits for certificates and ratings already completed.

For more information, visit the Aviation Flight Technology (http://www.ccm.edu/academics/degrees/aviationflight.aspx) website.

Degrees
AAS Aviation Flight Technology
(P3640)

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Courses titled "Flight Training" are 1-credit, self-paced courses that require successful completion before progressing to the next level of training. The course fee covers the cost of flight training at the off-campus training facility. Students enrolled in these courses are required to purchase accident liability and aircraft damage liability insurance.

Faculty
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Professor, Engineering Technologies
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Courses
AVT-101. Introduction to Aviation. 1 Credit.
LECT 1 hr.
An introduction to the career of an aviation professional. Topics discussed include the history of commercial aviation and the regulations that govern the industry, the professional ethics and responsibilities of the aviation professional, an overview of career opportunities, typical career paths and basic qualifications.

Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

AVT-103. Introduction to Basic Flight Training. 3 Credits.
LECT as required
This course serves as the initial introduction to flight training for students enrolled in the Aviation Flight Technology program. Students are introduced to basic airmanship, airplane controls and radio communication. The student will start with initial lessons in the college's simulator and progress to actual flight time in an airplane. This course will take place both on and off campus. Scheduling of flight lessons is the responsibility of the student. Students must be at least up to Flight Lesson 6 to fulfill the requirements of the course. This course runs for 15 weeks.

Prerequisites: Permission of department chair

Additional Fees: Course fee applies.
AVT-110. Flight Operations I. 3 Credits.
LECT 3 hrs.
This course is designed to prepare students to successfully pass the FAA Private Pilot computer examination. The course is also designed to complement the Flight Training IA course (AVT-111). The subject area includes introduction to the airplane, airplane systems, airport, communication and air traffic control, weight and balance, meteorology, federal aviation regulations, aeronautical charts, radio navigation, Airman's Information Manual, flight computer, medical factors of flight and cross-country flying. The FAA Private Pilot knowledge exam is given at computer testing centers throughout the area. The scheduling of the exam and the fee to take the exam are the responsibility of the student. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-111. Flight Training IA. 1 Credit.
LECT as required
This is the first part of the flight training required for the Private Pilot Practical exam, airplane category, class single-engine land. The student starts with basic aircraft maneuvers, progressing through solo flight and the start of the cross-country flight requirements. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. A student must be at least up to Flight Lesson 12 to fulfill the requirements of the course. This course runs for 8 weeks. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-112. Flight Training IB. 1 Credit.
LECT as required
This is a continuation of Flight Training IA. The student is expected to continue flight training requirements to meet the Private Pilot Practical exam. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. A student must successfully pass the Final Stage Check to fulfill the requirements of the course. This course runs for 8 weeks. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-118. Aerodynamics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of the aerodynamic forces that affect flight. Airframe designs are studied to determine what effects they have on aircraft performance. Other topics include glide performance, aircraft stability, range and endurance, and propulsive efficiency. Laboratory projects are performed to reinforce concepts learned in lecture. 
**Prerequisites:** MAT-007 or equivalent  
**Additional Fees:** Course fee applies.

AVT-121. Flight Training IIA. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. The student is introduced to commercial maneuvers and instrument flying, solo cross-country flying using pilotage, dead reckoning and radio navigation. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 8 weeks. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-122. Flight Training IIIB. 1 Credit.
LECT as required
This is a continuation of the flight training required to meet the practical test standards for the commercial certificate and instrument rating. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-201. Flight Training IIIA. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. Students will complete the solo cross-country requirements during this phase of training and develop a high degree of proficiency in commercial and primary maneuvers. Instrument flight training begins in Flight III. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 5 weeks. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-202. Flight Training IIIB. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-203. Flight Training IIIC. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. 
**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

AVT-205. Aircraft Systems. 3 Credits.
LECT 3 hrs.
It is the purpose of this course to have the student gain the knowledge of the design, function and operation of aircraft engines, aircraft instruments and maintenance operations. The student should be able to understand the inspections and the function of maintenance personnel as they relate to aircraft maintenance. The student should also be able to explain the operations of various aircraft components and instruments and describe their operation. 
**Prerequisites:** MAT-007 (or equivalent), Placement basis or ENG-025 or ENG-022 or ENG-007.
**AVT-208. Flight Operations: Instrument. 3 Credits.**
LECT 3 hrs.
This course is designed to prepare students to pass the FAA Instrument Pilot Computer Examination. Subject areas include FAR’s air traffic system and procedures, Airman’s Information Manual, IFR navigation systems, IFR charts and approach procedures, weather, forecasts and IFR flight instruments. Successful completion of this course requires a passing grade on the FAA Commercial Pilot Knowledge exam, which is given at computer testing centers available throughout the area. The fee for the exam is the responsibility of the student.

**Prerequisites:** AVT-110.

**AVT-211. Flight Training IVA. 1 Credit.**
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. Students should develop a high degree of proficiency in commercial and primary maneuvers, instrument approaches and en-route procedures. In addition, instruction and flights in complex aircraft take place during this phase. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 8 weeks.

**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

**AVT-212. Flight Training IVB. 1 Credit.**
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. The student is expected to demonstrate proficiency as a commercial pilot with an instrument rating. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 8 weeks.

**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

**AVT-215. Flight Operations: Commercial. 3 Credits.**
LECT 3 hrs.
This course is a continuation of the study of commercial pilot flight operation and is designed to prepare the student to successfully pass the FAA Commercial Pilot computer examination. Subject areas covered include advanced topics in aircraft performance, meteorology, aircraft systems, radio navigation, aerodynamics, weight and balance, FARs, physiology of flight, environmental systems and operational procedures. Successful completion of this course requires a passing grade on the FAA Commercial Pilot Knowledge exam, which is given at computer testing centers available throughout the area. The fee for the exam is the responsibility of the student.

**Prerequisites:** AVT-110.

**AVT-239. Cooperative Work Experience - AVT. 3 Credits.**
COOP 3 hrs.
A field experience in one of the various aspects of the aviation industry (non-flying positions). Designed for the students in Program 3640 to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included.

**Prerequisites:** Permission of department chair.

**AVT-291. Special Topic in Flight Training I. 1 Credit.**
LAB 2 hrs.
The Special Topics in Flight Training I, II and III allows for the insertion of additional flight hours in the flight training program for the curriculum. The course content can be adjusted to meet the needs of a student requiring specialized flight training or additional hours in order to complete the specific requirements of a certificate, add-on or specialization. The student must, with the help of the faculty, establish specific goals and objectives for the completion of a Special Topics in Flight Training segment. Flight training will take place off-campus at the contracted flight school, and scheduling of the lessons is the responsibility of the student.

**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

**AVT-292. Special Topics in Flight Training II. 1 Credit.**
LAB 2 hrs.
The Special Topics in Flight Training I, II and III allows for the insertion of additional flight hours in the flight training program for the curriculum. The course content can be adjusted to meet the needs of a student requiring specialized flight training or additional hours in order to complete the specific requirements of a certificate, add-on or specialization. The student must, with the help of the faculty, establish specific goals and objectives for the completion of a Special Topics in Flight Training segment. Flight training will take place off-campus at the contracted flight school, and scheduling of the lessons is the responsibility of the student.

**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

**AVT-293. Special Topic in Flight Training III. 1 Credit.**
LAB 2 hrs.
The Special Topics in Flight Training I, II and III allows for the insertion of additional flight hours in the flight training program for the curriculum. The course content can be adjusted to meet the needs of a student requiring specialized flight training or additional hours in order to complete the specific requirements of a certificate, add-on or specialization. The student must, with the help of the faculty, establish specific goals and objectives for the completion of a Special Topics in Flight Training segment. Flight training will take place off-campus at the contracted flight school, and scheduling of the lessons is the responsibility of the student.

**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.
Biotechnology

Associate in Applied Science Degree

Note: Biotechnology students requiring developmental courses in math must complete MAT-016 Intermediate Algebra prior to taking courses in Biology and Chemistry.

Biotechnology, the most rapidly growing sector in the field of biology and a major industry in New Jersey, is the application of the basic principles of the life sciences in the study of plants, animals, microbes, tissues, cells, biological molecules or a product that has a biological process attached to it. Students learn modern biotechnology methods and instrumentation and graduate with both theoretical knowledge and practical training and an Associate in Applied Science degree. Students are equipped with state-of-the-art skills including DNA fingerprinting, genetic engineering and HPLC, and are able to work at the technician level in research and pharmaceutical laboratories, molecular genetics, cosmetic/personal care product laboratories, biochemical, and food or animal care facilities. Graduates qualify for positions as biotechnology technicians, staff technologists, research assistants, microbiologists, histologists or cosmetic laboratory technologists. Students can make a choice for either direct employment and/or transfer to a four-year institution for a baccalaureate degree in biology or related scientific disciplines. Courses in this program are also ideal for retraining purposes.

Our Cooperative Education program (co-op) provides students the opportunity to gain valuable, practical skills working in industry as part of their educational experience.

For more information, visit the Biotechnology (http://www.ccm.edu/academics/degrees/biotech.aspx) website.

Degrees

AAS Biotechnology

(P3330)

General Education Foundation

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Biotechnology Core

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<tr>
<td>CHM-128</td>
<td>General Chemistry II - Laboratory</td>
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<tr>
<td>BIO-123</td>
<td>Cell Biology</td>
<td>4</td>
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<tr>
<td>BIO-215</td>
<td>Microbiology</td>
<td>4</td>
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</tbody>
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CHM-212  Biochemistry (Spring)  4
CHM-210  Essentials of Organic Chemistry (Summer)  4
CHM-220  Instrumental Methods of Analysis (Spring)  5
PHY-103  Concepts of Physics  4
Technical Elective  8
Free Electives  3
Biotechnology Core Credits  44
Total Credits  64

Students should consult with their academic advisors when selecting free electives.

Science courses completed by students prior to entering the Biotechnology program must have been taken within the past seven years. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

Faculty

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Courses

BIO-100. Elements in Biology. 3 Credits.
LECT 3 hrs.
A foundation providing necessary skills and concepts needed to pursue the biology major. The course stresses skill development in areas such as communication, classification, inquiry, mathematical measurement, data analysis and report writing. Skills then are applied to the study of the cell cycle and diverse life processes.
Additional Fees: Course fee applies.

BIO-101. Anatomy and Physiology I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
The structure and function of the human organism is studied. Special emphasis is given to interrelationships of organs and organ systems. Cellular morphology and function are included for an appreciation of the adult form. The student is introduced to basic chemistry, the cell, basic tissues, the skeletal, muscular and nervous systems. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-007 or ENG-025 or ENG-022 and MAT-016
Additional Fees: Course fee applies.

BIO-102. Anatomy and Physiology II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A continuation of Anatomy and Physiology I. The circulatory, respiratory, digestive, urinary, endocrine and reproductive systems are studied. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: BIO-101 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-115. Human Sexuality. 3 Credits.
LECT 3 hrs.
Provides an introductory knowledge of the basic topics in human sexuality. Topics presented are the basic structure and function of the male and female reproductive systems, sexual response and behavior, pregnancy, birth control, sexual disease, atypical behavior, sex and the law, and sexuality through the life cycle. Films, slides, panel discussions and guest lectures are employed to enhance the educational process. The course is open to all students at the college as a free elective and does not fulfill any science requirement.

BIO-116. Animal Control Officer’s Training Course. 3 Credits.
LECT 3 hrs.
Preparation for New Jersey State Certification as an Animal Control Officer. Topics include legal authority for animal control (federal, state, local); courtroom procedures; animal behavior, capture and handling; disease recognition, prevention and control; shelter operations; and community relations.

BIO-118. Biomedical Ethics. 3 Credits.
LECT 3 hrs.
This course introduces students to major ethical issues in areas of biomedicine in contemporary society. The focal point of the course is a process for ethical reasoning and ethical decision making. Students identify ethical problems, assess information relevant to decisions, identify stakeholders affected by decisions, recognize competing values, consider options, make decisions and realize the consequences of decisions. The process is applied to issues in such fields as genetics, death and dying, reproduction, public policy and medical decision making. This course does not fulfill a laboratory science requirement.

BIO-121. General Biology I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include the fundamentals of chemistry, cell structure and function, and the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-122. General Biology II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A continuation of General Biology I. Topics include homeostasis, animal reproduction, embryonic development, genetics, ecology and evolution. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: BIO-121 or BIO-180 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-123. Cell Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include the fundamentals of chemistry, cell structure and function, and the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.
BIO-127. Biology of Environmental Concerns. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A survey of ecological issues from a variety of perspectives. The course provides an awareness of environmental problems, a knowledge of cause-and-effect relationships of diverse activities on this planet and a basis for making informed judgments about the potential solutions to environmental problems. Major topics include the roots of our environmental problems, introductory concepts in ecology, human population dynamics and control, food resources and world hunger, renewable and nonrenewable energy resources, mineral resources and solid waste, wild plant and animal resources, water resources, air pollution, water pollution, pesticides and pest control, economics, politics and the environment, world views, and ethics and the environment. This course fulfills the general education laboratory science requirement.
**Prerequisites:** Placement basis or ENG-007 or ENG-022 or ENG-025
**Additional Fees:** Course fee applies.

BIO-132. Concepts in Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A basic introduction to the study of biological science designed for the non-science major. Topics include the hierarchy of organization, life processes, cell theory, human genetics, theories of evolution, biochemistry and some principles of ecology. This course fulfills the general education laboratory science requirement.
**Prerequisites:** Placement basis or ENG-025 or ENG-007 or ENG-022
**Additional Fees:** Course fee applies.

BIO-133. Human Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. An introduction to the body systems and the factors which affect human physiology. Lectures include the basic anatomy and physiology of the major systems plus discussion topics emphasizing nutrition, exercise, sexuality, genetic engineering and recent advances in biotechnology. This course fulfills the general education laboratory science requirement.
**Prerequisites:** Placement basis or ENG-025 or ENG-007 or ENG-022
**Additional Fees:** Course fee applies.

BIO-180. General Biology I - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include fundamentals of chemistry, cell structure and function, the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
**Prerequisites:** Permission of department chair or honors advisor
**Additional Fees:** Course fee applies.

BIO-181. General Biology II - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. A continuation of BIO-180 General Biology I Honors. Topics include homeostasis, animal reproduction and embryonic development, genetics, ecology, and evolution. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
**Prerequisites:** BIO-180 or BIO-121 and permission of honors advisor
**Additional Fees:** Course fee applies.

BIO-201. Genetics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. Provides the student with a broad knowledge of genetics from the molecular to the organismal level. Topics covered include the molecular and Mendelian concepts of heredity and their relationship to cell function, development, population changes and evolution and biotechnology. Laboratory exercises emphasize a variety of techniques and skills used in genetic research and testing.
**Prerequisites:** BIO-121 and BIO-122 or BIO-180 and BIO-181 (Minimum grade of C)
**Additional Fees:** Course fee applies.

BIO-202. Ecology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. This course introduces the basic fundamentals of ecology, the study of the interrelationships between organisms and their environment. Topics include an introduction to ecosystem structure and function, abiotic factors in ecosystems, energy flow and mineral cycling, population and evolutionary ecology, community ecology, a comprehensive survey of aquatic and terrestrial ecosystems, and human ecology. Laboratories and field trips are designed to introduce students to techniques used in basic ecological research.
**Prerequisites:** BIO-121 or BIO-180 or LHT-110 (minimum grade of C)
**Additional Fees:** Course fee applies.

BIO-215. Microbiology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of microorganisms, including viruses, bacteria, fungi, protozoa and algae. Topics covered include microbial anatomy, physiology, genetics, ecology and methods of control. Research methods and modern immunological concepts also are discussed. Laboratory exercises in basic microbiological techniques and the study of living microorganisms are designed to supplement the theory presented.
**Prerequisites:** Placement basis or ENG-007 or ENG-022 and BIO-101 or BIO-121 or BIO-123 or BIO-180 (minimum grade of C) and CHM-117 or CHM-125 and CHM-126 (Minimum grade of C)
**Additional Fees:** Course fee applies.

BIO-223. Cell and Molecular Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of biological molecules and their functions. Emphasis will be placed on the mechanism and regulation of macromolecule synthesis. Laboratory exercises will focus on instrumentation and techniques used in biological research.
**Prerequisites:** BIO-121 or BIO-123 and CHM-125 and CHM-126
**Additional Fees:** Course fee applies.
BIO-226. Cooperative Industrial Experience - Biology. 3 Credits. 
LECT 3 hrs. 
On-site work hours 300. An opportunity for selected students enrolled in the Biotechnology program to obtain job-oriented laboratory training in an industrial environment prior to career employment. Students desiring to participate in this experience should make their interest known to the department chair or the Office of Career Services and Cooperative Education by the end of their second semester. 
Prerequisites: Permission of department chair.

BIO-233. Independent Study in Biology. 3 Credits. 
LECT 3 hrs. 
An opportunity for selected students to participate in biological research under close supervision of the biology faculty. Interested students should make their interest known early in the prior semester to the department chair, who will familiarize the students with criteria for selection and the steps to be taken to gain entrance to this course. This course does not fulfill any of the science requirements in biology but is offered as a free elective. 
Prerequisites: Permission of department chair 
Additional Fees: Course fee applies.

BIO-260. Introduction to Marine Biology. 4 Credits. 
LECT 3 hrs., LAB 3 hrs. 
Summer semester only. A field- and laboratory-oriented undergraduate course covering the biology and characteristics of marine animals and plants. The course is designed to provide experience in collecting and identifying examples of local marine organisms. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey 
Prerequisites: BIO-121 and permission of department chair 
Additional Fees: Course fee applies.

BIO-262. Introduction to Marine Sciences. 4 Credits. 
LECT 3 hrs., LAB 3 hrs. 
Summer Semester only. A field-oriented, lower-division undergraduate course covering the principal disciplines in the marine sciences. The course is designed to help the student evaluate his or her interest in the marine science world. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey 
Prerequisites: Permission of department chair 
Additional Fees: Course fee applies.

BIO-270. Immunology. 3 Credits. 
LECT 3 hrs. 
An introductory-level course that covers the basic immunologic concepts of cells and humoral products of the immune system, the genetic control of immunity and generation of diversity, and antigen-antibody reactions. These basic concepts are correlated to clinical applications as they relate to laboratory testing manifestations of disease, such as autoimmunity, hypersensitivity, transplantation, tumor immunology and immunodeficiency. 
Prerequisites: BIO-215 (Minimum grade C).

BIO-274. Pathophysiology. 3 Credits. 
LECT 3 hrs. 
Pathophysiology is a course which studies the physiological alterations associated with common disease processes which affect human beings across the lifespan. Common diseases of the major organ systems are covered as well as such general issues as infection, neoplasm, inflammation, fluid and electrolyte imbalance, trauma, and shock. 
Prerequisites: BIO-101 and BIO-102 and CHM-117.

BIO-295. Special Topics in Biology. 4 Credits. 
LECT 4 hrs. 
An examination of selected topics or issues in biology. Topics may differ each time the course is offered. Students should consult the department chair for further information. 
Prerequisites: A introductory course in Biology 
Additional Fees: Course fee applies.

CHM-100. Elements of Chemistry. 3 Credits. 
LECT 3 hrs. 
A one-semester, introductory 3-credit, non-laboratory course designed for students with little or no background in chemistry. Emphasis is on preparing students for General Chemistry and Introductory Chemistry courses. The course encompasses chemical principles and calculations with a brief review of algebra. 
Prerequisites: MAT-016.

CHM-105. Forensic Science. 4 Credits. 
LECT 3 hrs., LAB 3 hrs. 
Designed for the non-science major. An introduction to the applications of the physical and biological sciences in analyzing and evaluating physical evidence as related to crime and the law. 
Additional Fees: Course fee applies.

CHM-117. Introductory Chemistry Laboratory. 3 Credits. 
RECI 1 hr., LECT 3 hrs. 
An introduction to the basic concepts of inorganic, organic and biochemistry. The emphasis is on the relationship of these concepts to physiological chemistry and living systems. All remedial courses listed must be completed prior to taking this course. 
Prerequisites: Placement basis or MAT-016 (minimum grade of C) and ENG-025 or ENG-022 or ENG-007 
Corequisites: CHM-118.

CHM-118. Introductory Chemistry Laboratory. 1 Credit. 
LAB 3 hrs. 
Laboratory experiments illustrate principles studied in CHM-117. Required for Landscape and Horticultural Technology, liberal arts majors and some Allied Health programs. 
Prerequisites: Placement basis or MAT-016 and ENG-025 or ENG-022 or ENG-007 
Corequisites: CHM-117 
Additional Fees: Course fee applies.

CHM-125. General Chemistry I - Lecture. 3 Credits. 
RECI 1 hr., LECT 3 hrs. 
A study of the fundamental principles of chemistry and their application to chemical reactions. Topics include the structure of the atom, concepts of matter, mass relationships for pure substances and chemical reactions, solutions, electronic structure, the chemical bond, nuclear reactions and gases. All remedial courses listed must be completed prior to taking this course. 
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007 
Corequisites: CHM-126.
CHM-126. General Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-125. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-125
Additional Fees: Course fee applies.

CHM-127. General Chemistry II - Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
A continuation of General Chemistry I with emphasis on chemical equilibrium and energy changes in chemical reactions. Also included are acids, bases, buffers, chemical thermodynamics, kinetics, qualitative analysis and electrochemistry. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 (minimum grade of C), CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-128.

CHM-128. General Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-127. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 and CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-127
Additional Fees: Course fee applies.

CHM-136. Environmental Regulation. 3 Credits.
LECT 3 hrs.
This course is an overview of critical environmental issues encountered by industry from a regulatory perspective. Various federal and New Jersey state regulations pertaining to air, water, hazardous waste and hazardous materials management are investigated. Students acquire knowledge on how industry complies with the diversity of regulatory requirements. Students are exposed to examples of instances where industrial non-compliance with applicable regulations has led to deleterious environmental and occupational health effects. Current issues and their significance to environmental and occupational health are discussed including, Clean Water Act, Clean Air Act, Environmental Cleanup and Responsibility Act (ECRA), Resource Conservation and Recovery Act (RCRA), Occupational Safety and Health Act (OSHA), Toxic Substance Control Act (TSCA), Asbestos, indoor air quality and underground storage tanks.
Prerequisites: BIO-123 and CHM-125.

CHM-204. Principles of Occupational Health and Safety. 3 Credits.
LECT 3 hrs.
A survey course providing an overview of industrial hygiene and the roles that the industrial hygiene professional plays in recognizing, evaluating and controlling hazards in the workplace. This course provides an introduction to the qualitative and quantitative issues essential to comprehend occupational safety and health principles. Case studies and hands-on exercises are utilized to stress key concepts.

CHM-210. Essentials of Organic Chemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer Semester only. This course is the study of the basic principles of structure, reactivity and nomenclature in organic chemistry. The laboratory develops basic work skills in the types of experiments performed in a typical organic chemistry laboratory with emphasis on the safe handling of laboratory chemicals and the proper presentation of experimental results.
Prerequisites: CHM-117, CHM-118 or CHM-127, CHM-128 (minimum grade of C for all prerequisites)
Additional Fees: Course fee applies.

CHM-212. Biochemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. An introduction to physiological chemistry. Lectures cover amino acids, proteins, lipids, nucleic acids, carbohydrates, molecular genetics, energetics and metabolic pathways. Lab reinforces concepts covered in lecture. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-117 or CHM-125
Additional Fees: Course fee applies.

CHM-219. Quantitative Chemical Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Fall Semester only. Principles of modern quantitative methods in chemistry, including the study of chemical equilibria, solubility, acidity and complex formation. The laboratory work involves practical applications of inorganic and organic analysis including volumetric, gravimetric, chromatographic and instrumental techniques. Emphasis is placed on the statistical treatment of data and report writing. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-117 or CHM-127 or equivalent
Additional Fees: Course fee applies.

CHM-220. Instrumental Methods of Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Spring Semester only. This survey course covers theory and applications of modern instrumentation utilized to solve problems in chemical analysis. Laboratory work involves hands-on experience utilizing instruments such as gas(GC), liquid(HPLC) and ion chromatography; spectrophotometric methods including visible, ultraviolet, infrared(FTIR)and atomic absorption; ICP and other methods, including ion selective electrode methods; and electrophoretic methods including capillary electrophoresis(HPCE). Emphasis is placed on the comparison of methods, the collection and interpretation of laboratory data, technical report writing and record keeping. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127 or equivalent (minimum grade of C)
Additional Fees: Course fee applies.
CHM-228. Cooperative Industrial Experience - Chemical Technology. 3 Credits.
COOP 3 hrs.
This course provides selected students enrolled in the Technology programs with job-oriented laboratory training and practical work experience in an industrial environment prior to career employment. The course may be taken as a three-credit technical elective. Students desiring to participate in this experience should make their interests known to the department chair by the end of their second semester. Fourth semester status in Chemical Technology, Environmental Science Option or Biotechnology programs required.
Prerequisites: Permission of department chair.

CHM-231. Organic Chemistry I - Lecture. 3 Credits.
LECT 3 hrs.
This course is an introduction to the chemistry of carbon compounds. Topics include a study of the fundamental concepts of structure and stereochemistry, physical properties of organic compounds and a functional approach to the interpretation of organic reactions. This course is designed for majors in Biology, Chemistry, Pharmacy, and for students preparing for medical, dental and veterinary schools. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127, CHM-128 (minimum grade C)
Corequisites: CHM-232.

CHM-232. Organic Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments stress techniques involved in the synthesis and purification of typical organic compounds using both macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Corequisites: CHM-231
Additional Fees: Course fee applies.

CHM-233. Organic Chemistry II - Lecture. 3 Credits.
LECT 3 hrs.
A continuation of the study of organic compounds with further study of functional groups, reaction mechanisms including nucleophilic substitution and elimination reactions, and infrared and nuclear magnetic resonance spectroscopy. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 (Minimum Grade of C)
Corequisites: CHM-234.

CHM-234. Organic Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments involve the multi-step synthesis of organic compounds, which illustrate the principles of CHM-233, using macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 and CHM-232
Corequisites: CHM-233
Additional Fees: Course fee applies.

CHM-235. Independent Study in Chemistry. 3 Credits.
LECT 3 hrs.
This course is an opportunity for selected students to participate in independent research under close supervision of a Chemistry faculty member. Interested students should make their interests known early in the prior semester to the department chair who will detail the criteria for selection.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CHM-295. Special Topics in Chemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An examination of selected topics or issues in chemistry. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Chemistry and permission of department chair
Additional Fees: Course fee applies.

CHM-296. Special Topics in Chemistry. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in chemistry. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Chemistry and permission of department chair.
Broadcasting Arts and Technology, Media Studies

After attaining a degree in Broadcasting Arts and Technology, Media Studies, students are prepared to transfer and complete degree requirements in communication, media or broadcasting. This program focuses on developing media skills and offers technical applications in the areas of television and multimedia. The Broadcasting Arts and Technology emphasis provides opportunities for a supervised media internship in a specialized area.

For more information, visit the Department of Communication (http://www.ccm.edu/academics/divdep/liberalarts/communication/default.aspx) webpage.

Degrees
AA Broadcasting Arts and Media Studies - An Option within Liberal Arts (P1132)

General Education Foundation
Communication 9
- ENG-111 English Composition I
- ENG-112 English Composition II
- COM-109 Speech Fundamentals
Math-Science-Technology 12
- MAT-120 Mathematics for the Liberal Arts
- or MAT-130 Probability and Statistics
Laboratory Science Elective
- CMP-126 Computer Technology and Applications
Social Science 6
- SOC-120 Principles of Sociology
- PSY-113 General Psychology
Humanities 9
- Language/Literature Sequence 1
- Humanities Elective 1
History 1 6
- ISA-110 Intercultural Communication
Diversity 3
General Education Foundation Credits 45

Broadcasting Arts and Technology Core
MED-114 Media Aesthetics 3
MED-117 Introduction to Broadcasting 3
MED-210 Digital Video Editing 3
MED-211 Television Production I 3
MED-212 Television Production II 3
Restricted Elective (select one class) 3-4
- MED-110 Multimedia I
- MED-119 Digital Media Production
- MED-220 Animation
- MED-240 Advanced Animation
- MED-291 Special Topics in Media

MED-292 Special Topics in Media
MED-293 Special Topics in Media
COM-101 Introduction to Communication
COM-102 Advertising and Society
COM-103 Introduction to Public Relations
COM-104 Interpersonal Communication
COM-105 Media Literacy
COM-111 Introduction to Journalism
COM-112 Advanced Journalism
COM-115 Introduction to the Mass Media
COM-120 Broadcast Journalism
COM-209 Editing and Publication Design
COM-230 Communications Internship
COM-234 Introduction to Film
COM-291 Special Topics in Communication
COM-292 Special Topics in Communication
PHO-213 Documentary Photography

Broadcasting Arts and Technology Core Credits 18-19
Total Credits 63-64

Faculty
Raymond Kalas
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Courses
MED-110. Multimedia I. 3 Credits.
LECT 3 hrs.
Multimedia I is a survey course designed to allow students to explore, discuss, develop and use multimedia technology. This computer-based course offers an extensive overview of the technologies of multimedia. Students engage in issues related to usability, management and distribution. Topics include multimedia development and design, media elements, and emerging hardware and software trends. A multimedia prototype project that demonstrates conceptual and technical understanding is required.
Additional Fees: Course fee applies.

MED-113. Multimedia II. 3 Credits.
LECT 3 hrs.
An advanced course designed to allow students to apply the theory and basic practical knowledge presented in Multimedia I. Students apply their knowledge productions for DVD, local networks or the Internet. Students incorporate traditional media production elements such as video and audio combined with the latest features and technologies. Conceptualization, user interface design and prototyping are key course elements. A multimedia prototype project that demonstrates conceptual and technical understanding is required.
Prerequisites: MED-110
Additional Fees: Course fee applies.
MED-114. Media Aesthetics. 3 Credits.
LECT 3 hrs.
Media Aesthetics looks at the importance, influence and meaning of visual images designed for use in electronic media. Through current and historical examples, students learn the principles and significance of media aesthetics including light and color, space and structure, time and motion, and sound, and how they are used to optimize effective communication. Students learn how aesthetic elements of television and multimedia have been translated into vectors - forces that push or pull users in certain directions. Operationally, students learn how to interpret, order, clarify and intensify various communications including fiction, by applying appropriate aesthetic principles. Comparisons between television and multimedia images are closely examined. Students may apply knowledge of media aesthetics by producing projects using broadcast and digital media facilities.
Additional Fees: Course fee applies.

MED-117. Introduction to Broadcasting. 3 Credits.
LECT 3 hrs.
This course offers a historical and content analysis approach to the study of broadcast and narrowcast communications. Included are the research and study of systems, regulations, program genres, social effects on audiences, and the future of the industry. This is accomplished via lectures and discussions, handouts, reading assignments and in-class viewing and listening assignments.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

MED-119. Digital Media Production. 3 Credits.
LECT 3 hrs.
This course provides students with theory and training in the area of digital content development for digital media productions. Software and hardware training in digital video, audio, animation and graphics are introduced. In addition, the appropriate use of these areas of content in developing digital media productions and interface design are discussed.
Additional Fees: Course fee applies.

MED-210. Digital Video Editing. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Through hands-on learning, Digital Video Editing provides students with the fundamental principles of video editing with a focus on the techniques and technology used to achieve a superior final product. An in-depth exploration of non-linear editing concepts includes a deeper understanding of primary, secondary and tertiary motion, shot types, sequencing, transitions and continuity. Students learn to log and capture raw video, assemble shots on a timeline, create, add, and edit text, audio tracks, title animation, effects, transitions, continuity and video compositing. This course is ideal for students who wish to create and edit a professional video for broadcast, webcast and other motion media venues.
Prerequisites: MED-113 or MED-211
Additional Fees: Course fee applies.

MED-211. Television Production I. 3 Credits.
LECT 3 hrs.
This course introduces students to the basic operation of a television studio and the production process. Students learn techniques and develop skills in various studio functions including camera, switching, sound, lighting, teleprompter, scriptwriting and directing. Collaboration and teamwork are emphasized.
Additional Fees: Course fee applies.

MED-212. Television Production II. 3 Credits.
LECT 3 hrs.
Students employ skills learned in Television Production I and learn advanced production skills including studio and remote producing, remote-location video shooting, digital editing, advanced special FX generation and switching, and set design via a "live on tape" production of an actual television program.
Prerequisites: MED-211
Corequisites: MED-210
Additional Fees: Course fee applies.

MED-213. Multimedia Authoring and Design. 3 Credits.
LECT 3 hrs.
Using industry-standard authoring software, students apply multimedia technology to assemble a real-world interactive multimedia project. Concepts and principles of user interface design, digital audio and video production, team production techniques and usability testing are employed. As members of a production team, students plan, manage and implement a complex multimedia production project to be used on DVD, a local network or the Internet for a participating business partner.
Prerequisites: MED-113
Additional Fees: Course fee applies.

MED-220. Animation. 3 Credits.
LECT 3 hrs.
This is an advanced production course utilizing 3D modeling and animation software to create animated imagery for video and multimedia applications. Software includes 3D Studio Max (3D animation) and Adobe Premiere and AfterEffects (digital video). Through assigned projects, students learn to combine live video and animation with compositing and bluescreening techniques.
Additional Fees: Course fee applies.

MED-224. Independent Study in Media. 3 Credits.
LECT 3 hrs.
Students, in consultation with a media advisor, undertake an in-depth analysis of a selected topic, problem or issue related to media or pursue additional media-related work experience. Students are responsible for developing a statement of goals, maintaining a weekly log and preparing a written and oral summary report. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-228. Cooperative Work Experience- Media Stud. 3 Credits.
COOP 3 hrs.
Actual applications of classroom learning in a supervised on-the-job training experience takes place daily. Students pursue their career objectives in the broadcasting arts or digital media area following a training plan with the assistance of the department chair and on-the-job supervisor. Interested students should consult with the Department of Information Technologies chair. Available only to Digital Media Technology majors.
Prerequisites: MED-212 or MED-213
Corequisites: MED-229.
MED-229. Cooperative Work Experience-Media Related Class. 1 Credit.
LECT 1 hr.
This course provides a variety of exercises that further develop students' technical skills, occupational adjustment and career development competencies. Exercises help to develop interpersonal and communication skills and help to ensure a positive cooperative work experience. This course is offered online. Available only Digital Media Technology majors.
Prerequisites: MED-212 or MED-213
Corequisites: MED-228.

MED-230. Media Internship. 3 Credits.
LECT 3 hrs.
Practical experience in the media career field is gained working part-time in an approved, supervised media-related environment or on an approved media-related project under the supervision of a media instructor and/or on-the-job supervisor. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair.

MED-240. Advanced Animation. 3 Credits.
LECT 3 hrs.
This advanced-level course is a continuation of MED-220 Animation and is designed to expose students to high-end 3-D modeling tools for digital animation, electronic post-production, digital special effects and digital multimedia. This course explores advanced applications in digital compositing, particle systems, Newtonian algorithms, kinemation, dynamation and 3-D characters.
Prerequisites: MED-220
Additional Fees: Course fee applies.

MED-291. Special Topics in Media. 1 Credit.
LECT 3 hrs.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-292. Special Topics in Media. 3 Credits.
LECT 1 hr.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-293. Special Topics in Media. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
Business Administration
Associate in Science Degree

This program is designed to meet the needs of students who wish to earn a baccalaureate degree in some area of business administration upon completing two additional years at a four-year institution. The curriculum prepares students for upper college-level specialization in finance, management, private or public accounting and marketing.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

For more information, visit the Business Administration (http://www.ccm.edu/academics/degrees/businessadmin.aspx) website.

Degrees

AS Business Administration
(P2110)

General Education Foundation

| Communication | 6 |
| ENG-111 English Composition I | |
| ENG-112 English Composition II | |
| Math-Science-Technology | |
| Restricted Math Elective - Select Two of the Following | 6 |
| MAT-110 College Algebra | |
| MAT-118 Calculus With Application to Business And Economics | |
| MAT-123 Precalculus | |
| MAT-124 Statistics | |
| MAT-130 Probability and Statistics | |
| MAT-131 Analytic Geometry and Calculus I | |
| Laboratory Science Elective | 4 |
| Social Science | 3 |
| ECO-211 Principles of Economics I | |
| Humanities | 6 |
| History Elective | |
| General Education Electives | 6 |
| Language Survey or Literature Sequence | |
| General Education Foundation Credits | 31 |

Business Core

| ACC-111 Principles of Accounting I - Financial Accounting | 3 |
| ACC-112 Principles of Accounting II - Managerial Accounting | 3 |
| BUS-112 Introduction to Business | 3 |
| BUS-215 Principles of Management | 3 |
| BUS-119 Business Information Systems and Applications | 3 |
| MKT-113 Principles of Marketing I | 3 |
| ECO-212 Principles of Economics II | 3 |
| Business Electives | 9 |

Free Electives | 3 |
Business Core Credits | 33 |
Total Credits | 64 |

Certificates of Achievement

- Finance - A Certificate of Achievement within Business Administration (p. 17)
- Small Business Management - A Certificate of Achievement within Business Administration (p. 17)

Finance

A Certificate of Achievement within Business Administration
(P0344)

The 12-credit Certificate of Achievement in Finance, offered through the Business Administration department, includes three required courses: Money and Banking, Principles of Finance and Investment Principles. It also includes one elective course from the following list: Investment Analysis, Personal Finance or Introduction to International Business.

The certificate in Finance takes a practical approach to the subject matter, providing broad exposure to the stock and bond markets, money and capital markets, financial management, financial planning and financial analysis while improving financial decision-making abilities. By gathering financial information and analyzing trends, students experience a practical hands-on approach to learning about finances. Students learn about the financial health of a firm, recognize the role and effects of money on the financial system, study investment alternatives offered in the securities market, analyze investment portfolios, learn how to effectively manage personal assets, and understand the role of the global marketplace in business and financial decisions. This combination provides a broad, comprehensive investigation of various aspects of the financial marketplace.

Core Courses

| BUS-211 Money and Banking | 9 |
| BUS-212 Principles of Finance | |
| BUS-218 Investment Principles | |

Elective Courses 1

Students must select one course from the following:

| BUS-136 Personal Finance | 3 |
| BUS-222 International Finance | |
| BUS-235 Investment Analysis | |

Total Credits | 12 |

1 Students should consult their academic advisor when selecting this course.

Small Business Management

A Certificate of Achievement within Business Administration
(P0400)
The Small Business Management Certificate of Achievement, offered through the Business Administration department, is a 12-credit certificate program that includes three required courses: Elements of Accounting, Small Business Planning and Finance, and Small Business Operations. It also includes an elective course, either Customer Relations or Advertising. The certificate provides a broad, comprehensive introduction and study of the essential components of starting and running a small business. It culminates in a capstone course, Small Business Operations that incorporates all aspects of the certificate’s learning. The Small Business Management Certificate takes a practical, hands-on approach to small business by providing an up-to-date foundation by exploring current planning, financing, accounting, advertising, customer relations and management concepts.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACC-110</td>
<td>Elements of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS-240</td>
<td>Small Business Planning &amp; Finance</td>
<td>3</td>
</tr>
<tr>
<td>BUS-219</td>
<td>Small Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>Select one course from the following:</td>
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<td>BUS-242</td>
<td>Customer Relations</td>
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<tr>
<td>MKT-218</td>
<td>Advertising</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**Courses**

ACC-110. Elements of Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
For career option students or transfer students, register by advisement only. This is an introductory accounting course that focuses on accounting for small businesses. Emphasis is placed on recordkeeping from basic journalizing to year-end closing and financial statement preparation. Additionally, the course covers payroll and taxation issues related to small business operations.

Prerequisites: MAT-014 or MAT-050 or equivalent
Additional Fees: Course fee applies.

ACC-111. Principles of Accounting I - Financial Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
Financial accounting is a service activity that functions to collect and communicate useful financial information about economic entities. The course covers processing accounting information assets and liabilities, accounting theory for proprietorships, corporations and financial statement analysis.

Prerequisites: MAT-016 or equivalent
Additional Fees: Course fee applies.

ACC-112. Principles of Accounting II - Managerial Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
A segment of accounting that deals specifically with how accounting data and other financial information can be used in the management of business, governmental or not-for-profit entities. The course is specifically designed to assist internal management and deals with cost-volume-profit analysis, cost systems, budgeting and performance evaluation for goal congruence and statement analysis designed for future managers.

Prerequisites: ACC-111
Additional Fees: Course fee applies.

ACC-211. Intermediate Accounting I. 3 Credits.
LECT 3 hrs.
A study of the complex aspect of financial accounting and reporting for persons outside the firm. Expanded treatment of generally accepted accounting principles (GAAP) underlying the preparation of financial statements and of cash and temporary investments, receivables, present value concepts, cash flow valuations of assets and inventories, methods of estimating the inventory depreciation and depletion.

Prerequisites: ACC-112.

**Faculty**

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B.A., University of Maryland
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MBA, Lindenwood University
B.S., Southern Illinois University
CH 204D 973-328-5674 kdsmith@ccm.edu
ACC-212. Intermediate Accounting II. 3 Credits.
LECT 3 hrs.
The complex aspects of a study of financial accounting and reporting for persons outside the firm. Expanded treatment of generally accepted accounting principles (GAAP) as they relate to long-term investments, liabilities (both current and long-term), leases, pensions, income taxes, earnings per share, financial statement analysis and other miscellaneous topics.
Prerequisites: ACC-211.

ACC-213. Tax Procedures. 3 Credits.
LECT 3 hrs.
A study of the Internal Revenue Code and application of accounting principles for preparation of individual income tax returns. Limited business application.
Prerequisites: ACC-111.

ACC-215. Cost Accounting. 3 Credits.
LECT 3 hrs.
The basic procedures and techniques of accounting for the production and distribution of goods and services in today's economy. Process and job-order methods, standards and standard costs, techniques of cost analysis and control.
Prerequisites: ACC-112.

ACC-230. Principles of Auditing. 3 Credits.
LECT 3 hrs.
The course integrates the most important concepts of auditing as well as certain practical aspects in a logical manner to assist students in understanding audit decision making and evidence accumulation. Coverage includes, but is not limited to, concepts of evidence accumulation; analytical procedures as audit tools; probability and risk and their effect on the audit; application of the auditing process to the sales and collection cycle and other cycles; audit reports and requirements for completion of the audit cycle.
Prerequisites: ACC-212.

ACC-231. Government and Not-For-Profit Accounting. 3 Credits.
LECT 3 hrs.
This course involves financial analysis and reporting for government and not-for-profit organizations, including concepts, standards, and procedures designed to accommodate the uniqueness of the not-for-profit environment. The course deals specifically with financial accounting and reporting aspects applicable to state and local governments and other special districts and public authorities; and the federal government agencies, universities and hospitals.
Prerequisites: ACC-212.

ACC-291. Special Topics in Accounting. 3 Credits.
LECT 3 hrs.
This course offers students an opportunity to explore special topics or issues in Accounting. Topics may differ each time the course is offered and may include areas of negotiation or conflict resolution.

ACC-292. Special Topics in Accounting. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in accounting. Topics may differ each time the course is offered. Students should consult the department chairperson for further information.

BUS-111. Business Mathematics. 3 Credits.
LECT 3 hrs.
For Career Option students only. This course offers a foundation in the essential mathematics of business. Topics include fractions, percentages, banking records, simple and compound interest, discounts, retailing mathematics, inventory, depreciation and payroll. Mathematics of investments, finance and taxes may also be included.

BUS-112. Introduction to Business. 3 Credits.
LECT 3 hrs.
This course introduces both business and non-business majors to various fields of business study. Topics include foundations of business and economic systems, management and leadership styles, entrepreneurship, motivational theory and techniques, personnel and production management, accounting, information systems, business law, union/management relations and global issues. The course prepares students for higher-level business study and explores a variety of major options and career paths.

BUS-119. Business Information Systems and Applications. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course provides an introduction to the various technical tools available to help solve problems in the field of business technology. This is a hands-on laboratory course designed to provide the student with experience in using business calculators, Windows Operating System, Microsoft Office, Internet and marketing research tools. Special emphasis is placed on the accounting and other financial information reports using Microsoft Office's Excel and Word programs.
Additional Fees: Course fee applies.

BUS-132. Fundamentals of Electronic Commerce. 3 Credits.
LECT 3 hrs.
This course offers the basic and necessary elements of understanding electronic commerce/business. Students are exposed to the nuts and bolts of building successful e-business enterprises. Included are an understanding of the business and value propositions; e-commerce business models; strategies for successful implementation; an understanding of e-commerce technologies, infrastructure and applications; e-commerce business functionality integration; security risk management; and electronic payments issues. Students in this class are expected to build and present a prototype e-commerce business enterprise as a group project.

BUS-135. Introduction to International Business. 3 Credits.
LECT 3 hrs.
This is essentially a survey course to introduce the field of international business and trade. A broad range of topics prepares students for the rapidly evolving global business world and for advanced study in international business. Topics include introduction to and overview of international business, the global economy, international business environments, issues related to operating and managing an international business, and concepts and theories related to the global marketplace.
BUS-136. Personal Finance. 3 Credits.
LECT 3 hrs.
This course provides a practical introduction to personal finance and money management by focusing on realistic ways to effectively manage and protect personal assets, minimize taxes and provide for a secure retirement. Students may design a personal budget and learn to make appropriate decisions with regard to savings, investments, insurance, credit protection and estate planning. Students evaluate the cost of borrowed money, real estate investments, effective use of credit, tax implications and the effects of the economy on personal financial decisions. The use of financial periodicals may be required.
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-201. Human Relations in Business. 3 Credits.
LECT 3 hrs.
This course provides a broad perspective dealing with human relations from the viewpoint of the manager. It treats the human aspect as it is encountered in the business organization. The behavior of individuals in interpersonal, intergroup and interorganizational situations as they relate to work is also studied.

BUS-205. Landscape Specifications and Estimating. 3 Credits.
LECT 3 hrs.
Required for students in Landscape Management and Design Agribusiness and Turf and Turfgrass Management and recommended for others with an interest in landscape maintenance or landscape design and installation. The course focuses on developing systems for the identification of costs associated with the preparation of landscape estimates and bids. Topics include pricing, budgeting, understanding and writing specifications; contracts and related issues; insurance and accounting applications for landscape businesses; estimating with an emphasis on cost-finding processes; and client and employee relations.

BUS-211. Money and Banking. 3 Credits.
LECT 3 hrs.
This course analyzes the organization and operation of our financial system. Included in the study are the money and capital markets, commercial banking and other financial institutions such as commercial finance companies. The relationship between financial and economic activity, including monetary and fiscal policy, is shown.
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-212. Principles of Finance. 3 Credits.
LECT 3 hrs.
This course is a study of principles and practices followed in the financial organization and operation of a business organization including financing new and growing businesses, sources of capital, banking and credit accommodations, and the handling of other financial matters.
Prerequisites: ACC-111 and ENG-025 or non-course equivalent.

BUS-213. Business Law I. 3 Credits.
LECT 3 hrs.
This course is a basic study of the fundamentals of legal liability, the growth of our legal system, and the legal rights, duties and obligations of the individual. Specifically covered are law and society, contracts, agency, and employment. Where applicable, the Uniform Commercial Code is used as the basis for statutory interpretation.

BUS-214. Business Law II. 3 Credits.
LECT 3 hrs.
This course is a further study of business law, covering personal property, bailments, sales, partnerships, commercial paper, secured transactions and insurance. Where applicable, the Uniform Commercial Code is used as the basis for statutory interpretation.
Prerequisites: BUS-213.

BUS-215. Principles of Management. 3 Credits.
LECT 3 hrs.
This course is a study of the basic managerial functions of planning, organizing, staffing, directing and controlling. Emphasis is placed on the theory of management, organization and executive leadership. Case studies of actual business situations present problems requiring executive decisions for solution.
Prerequisites: ENG-111, ENG-112 and BUS-119.

BUS-218. Investment Principles. 3 Credits.
LECT 3 hrs.
This course introduces students to basic types of investment alternatives focusing on the mechanics of investing including online investing, researching and interpreting financial information, understanding risk/return tradeoffs, and reviewing investment strategies associated with various stock orders. The course offers a thorough review of the primary and secondary securities markets, securities regulations and ethics, and a general understanding of the impact of the economy and the Federal Reserve on investment decisions. The course objective is to develop students into independently sophisticated investors through a practical hands-on approach. The use of financial periodicals may be required.
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-219. Small Business Operations. 3 Credits.
LECT 3 hrs.
This course focuses on all aspects of operating an existing business and in starting a new venture, culminating in the preparation and simulated execution of a business plan. Study includes evaluations of both new and existing businesses, financing approaches, forms of ownership, traditional and Internet marketing and advertising, directing, staffing, purchasing, risk mitigation, cash management, tax obligations, bootstrapping techniques, and financial and breakeven evaluation. This is a hands-on pragmatic approach to small business management.

BUS-222. International Finance. 3 Credits.
LECT 3 hrs.
International Finance provides a basic understanding of the relationship between the international business environment and the international financial markets. Topics to be covered include: international flow of funds, international capital markets, international monetary system, exchange rate behavior, and financial management of the multinational firm.
Prerequisites: ENG-025 or non-course equivalent and ECO-211.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
</table>
| BUS-224    | Cooperative Work Experience-Business                  | 3       | This course provides students enrolled in the Business Career curriculum with job-oriented training and practical work experience in a work environment prior to permanent employment. The course may be taken in fulfillment of a business elective in the Business Career curriculum. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their third semester.  
**Prerequisites:** Permission of department chair  
**Corequisites:** BUS-225. |
| BUS-225    | Cooperative Work Experience Business-Related Class    | 1       | A supplement to the cooperative work experience program, this course provides a variety of experiences to further develop students’ career development and occupational adjustment. It also develops positive points of view toward human relationships and the responsibilities of both the employee and the employer.  
**Prerequisites:** Permission of department chair  
**Corequisites:** BUS-224. |
| BUS-226    | Internship Work Experience-Business                   | 3       | This course provides students enrolled in the Business curriculum with job-oriented training and practical work experience in a non-paid work environment prior to permanent employment. The course may be taken in fulfillment of a business elective. Students desiring to participate in this experience should make their intentions known to the department chair during the prior semester.  
**Prerequisites:** Permission of department chair  
**Corequisites:** BUS-224. |
| BUS-232    | Electronic Commerce Management                         | 3       | This course includes features and characteristics that will provide an understanding of the essential elements of managing e-business functions, processes, and integrated information systems. Included are: the structure, functions, and management of digital organizations, systems integration and collaborative applications, workflow and process management, customer relationship management, enterprise resource planning, records and data management, risk management, business process re-engineering as well as strategic management issues and applications.  
**Corequisites:** BUS-225. |
| BUS-234    | Supply Chain Management                               | 3       | This course introduces the concepts of supply chain management. The student comes to understand how good supply chain management can be a competitive advantage of a firm. Within the strategic framework, facilities, inventory, transportation, and information are identified as key drivers of supply chain management.  
**Corequisites:** BUS-224. |
| BUS-235    | Investment Analysis                                   | 3       | Builds on the knowledge learned in the Investment Principles course with more in-depth security analysis. The course takes a strategy approach to investing by employing hands-on techniques for profitable decision making within a diversified portfolio. Learning risk/return tradeoffs, reducing risk through portfolio analysis under particular economic conditions, exploring fundamental and technical analysis, and utilizing derivatives by adding futures and options to a portfolio allows the student to become a more knowledgeable decision maker. Other topics include the time value of money, financial ratio analysis, and the use of real estate alternatives and limited partnerships in portfolio creation. The use of financial periodicals is required.  
**Prerequisites:** BUS-218. |
| BUS-240    | Small Business Planning and Finance                   | 3       | This course focuses on the planning and financing of small business ventures. Included is the development of a business plan. This includes market analysis and a resulting marketing plan, a comprehensive operations plan and the development of financial projections. Attention also is placed on attracting seed and growth capital from such sources as individuals, family, venture capital, investment banking and commercial banks. Bootstrapping or creative ways for obtaining greater impact of available funds is introduced. The end of the business cycle, business valuation and exit strategies are fully explored.  
**Prerequisites:** ENG-025 or non-course equivalent and MAT-016 or non-course equivalent. |
| BUS-242    | Customer Relations                                    | 3       | This course focuses on customer relations as the measure of present and future business success. It begins with describing how business develops its business strategy on identified customer base. Recognizing the challenge of meeting customer expectations, the course defines customer satisfaction and introduces approaches to move from satisfying the customer to delighting the customer. A comprehensive customer relations process, customer relationship management, is introduced and its role discussed in the electronic business age. |
| BUS-249    | Special Topics in Business                            | 3       | This course is an examination of selected topics or issues in business areas of study. Topics may differ each time the course is offered. Students should consult with the Department of Business Administration chair for additional information. Prerequisites may be required dependent on topic of study. |
| BUS-292    | Special Topics in Business                            | 3       | This course is an examination of selected topics or issues in business areas of study. Topics may differ each time the course is offered. Students should consult with the Department of Business Administration chair for additional information. Prerequisites may be required dependent on topic of study.  
**Corequisites:** BUS-224. |
MKT-113. Principles of Marketing I. 3 Credits.
LECT 3 hrs.
This is an introduction to basic principles and practices in marketing. The course provides an overview of the field of marketing in areas of consumer behavior, marketing management and channels of distribution and emphasizes the growth of the marketing concept.

MKT-114. Principles of Marketing II. 3 Credits.
LECT 3 hrs.
This course provides students with a usable managerial understanding of consumer behavior. This will help students prepare for careers in marketing management, sales and advertising.
Prerequisites: MKT-113.

MKT-214. Marketing Management. 3 Credits.
LECT 3 hrs.
This course is an integrated and analytical approach to marketing management combining text, lecture and current business events. Case studies will be utilized to aid students in developing marketing planning and honing decision making skills. Emphasis will focus on utilization of the marketing tools in order to maximize marketing goals.
Prerequisites: MKT-113.

MKT-215. Sales Principles and Practices. 3 Credits.
LECT 3 hrs.
This course examines the role of professional selling in the American economy. Customer needs and buying motives are evaluated and personal qualifications of competent salespersons are discussed. Various selling techniques are learned and simulated sales demonstrations are used to apply theories and techniques.

MKT-216. Sales Management. 3 Credits.
LECT 3 hrs.
This course explores the application of management principles to marketing departments and personnel, training and supervision of personnel, development of promotion plans and the relationship of the marketing department to the total organization.
Prerequisites: MKT-113.

MKT-218. Advertising. 3 Credits.
LECT 3 hrs., LAB 3 hrs.
This course provides a basic understanding of the business of advertising. Topics include the economics of advertising, planning and preparation of advertising, selection of media, establishing advertising objectives, coordination of advertising, sales promotion, and display, and developing an advertising budget.
Prerequisites: MKT-113, ENG-025 or non-course equivalent.

MKT-291. Special Topics in Marketing. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in marketing. Topics may differ each time the course is offered and may include areas such as retail marketing, negotiation or marketing research. Students should consult the department chairperson for further information.
Prerequisites: Permission of department chair.

MKT-292. Special Topics in Marketing. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in marketing. Topics may differ each time the course is offered and may include areas such as retail marketing, negotiation or marketing research. Students should consult the department chairperson for further information.
Prerequisites: Permission of department chair.
Business Career

Associate in Applied Science Degree

This career-oriented curriculum is designed to meet the basic requirements of those who wish to explore the various areas of business. This program may also be used to further the general and specialized skills of those already employed.

The curriculum is not designed with transfer as the desired objective. However, many courses in the program are accepted by baccalaureate-level colleges. Graduates have a fundamental knowledge of business principles, procedures and systems, and a broad background in theory and practice.

The Business Career curriculum provides the opportunity for the student to earn college credits through Cooperative Education, a supervised off-campus work experience in a business environment. A related on-campus class encourages an exchange of ideas, investigates and analyzes trends and operational procedures, and explores human relations practices on the job.

In addition, students may work toward Business Certificates of Achievement as part of their degree.

For students considering starting and running their own business, working in a family business or working for a small business, it is recommended that they utilize their business electives to complete the Small Business Management Certificate of Achievement. The following additional courses will meet the certificate requirements: BUS-219 Small Business Operations, BUS-240 Small Business Planning and Finance, and either BUS-242 Customer Relations or MKT-218 Advertising.

For students considering a career in finance, it is recommended that they utilize their business electives to complete the Certificate of Achievement in Finance. The following additional courses will meet the certificate requirements: BUS-211 Money and Banking, BUS-218 Investment Principles and BUS-136 Personal Finance (provided the student takes BUS-212 Principles of Finance as part of their Business core courses).

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

For more information, visit the Business Career (http://www.ccm.edu/academics/degrees/businesscareer.aspx) website.

Degrees

AAS Business Career

(P3400)

<table>
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<tr>
<th>General Education Foundation</th>
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<tbody>
<tr>
<td>Communication</td>
<td>6</td>
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<tr>
<td>ENG-111 English Composition I</td>
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<tr>
<td>ENG-112 English Composition II</td>
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<tr>
<td>Math-Science-Technology</td>
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<tr>
<td>MAT-120 Mathematics for the Liberal Arts</td>
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<td>Laboratory Science Elective</td>
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<td>Choose from General Education course list</td>
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<table>
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<tbody>
<tr>
<td>ECO-113 Elements of Economics</td>
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| General Education Foundation Credits | 23 |

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<th>Business Core</th>
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<tbody>
<tr>
<td>BUS-112 Introduction to Business</td>
<td>3</td>
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<tr>
<td>BUS-119 Business Information Systems and Applications</td>
<td>3</td>
</tr>
<tr>
<td>MKT-113 Principles of Marketing I</td>
<td>3</td>
</tr>
<tr>
<td>ACC-110 Elements of Accounting</td>
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<tr>
<td>ACC-111 Principles of Accounting I - Financial Accounting</td>
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<tr>
<td>ACC-112 Principles of Accounting II - Managerial Accounting</td>
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<tr>
<td>or BUS-212 Principles of Finance</td>
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<tr>
<td>BUS-213 Business Law I</td>
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<th>Business Electives</th>
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<td>Free Electives</td>
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<td>Business Core Credits</td>
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</tbody>
</table>

| Total Credits | 62-63 |

Faculty

Dr. Anthony F. Cupo
Chairperson, Professor Business Administration
Ed.D., Rutgers University
MBA, B.S., Fairleigh Dickinson University
CH 204A 973-328-5666 acupo@ccm.edu

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B.S., New Jersey City University
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Courses

ACC-110. Elements of Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
For career option students or transfer students, register by advisement only. This is an introductory accounting course that focuses on accounting for small businesses. Emphasis is placed on recordkeeping from basic journalizing to year-end closing and financial statement preparation. Additionally, the course covers payroll and taxation issues related to small business operations.
Prerequisites: MAT-014 or MAT-050 or equivalent
Corequisites: MAT-014 or MAT-050 or equivalent
Additional Fees: Course fee applies.

ACC-111. Principles of Accounting I - Financial Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
Financial accounting is a service activity that functions to collect and communicate useful financial information about economic entities. The course covers processing accounting information assets and liabilities, accounting theory for proprietorships, corporations and financial statement analysis.
Prerequisites: MAT-016 or equivalent
Additional Fees: Course fee applies.

ACC-112. Principles of Accounting II - Managerial Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
A segment of accounting that deals specifically with how accounting data and other financial information can be used in the management of business, governmental or not-for-profit entities. The course is specifically designed to assist internal management and deals with cost-volume-profit analysis, cost systems, budgeting and performance evaluation for goal congruence and statement analysis designed for future managers.
Prerequisites: ACC-111
Additional Fees: Course fee applies.

ACC-211. Intermediate Accounting I. 3 Credits.
LECT 3 hrs.
A study of the complex aspect of financial accounting and reporting for persons outside the firm. Expanded treatment of generally accepted accounting principles (GAAP) underlying the preparation of financial statements and of cash and temporary investments, receivables, present value concepts, cash flow valuations of assets and inventories, methods of estimating the inventory depreciation and depletion.
Prerequisites: ACC-112.

ACC-212. Intermediate Accounting II. 3 Credits.
LECT 3 hrs.
The complex aspects of a study of financial accounting and reporting for persons outside the firm. Expanded treatment of generally accepted accounting principles (GAAP) as they relate to long-term investments, liabilities (both current and long-term), leases, pensions, income taxes, earnings per share, financial statement analysis and other miscellaneous topics.
Prerequisites: ACC-211.

ACC-213. Tax Procedures. 3 Credits.
LECT 3 hrs.
A study of the Internal Revenue Code and application of accounting principles for preparation of individual income tax returns. Limited business application.
Prerequisites: ACC-111.

ACC-215. Cost Accounting. 3 Credits.
LECT 3 hrs.
The basic procedures and techniques of accounting for the production and distribution of goods and services in today’s economy. Process and job-order methods, standards and standard costs, techniques of cost analysis and control.
Prerequisites: ACC-112.

ACC-230. Principles of Auditing. 3 Credits.
LECT 3 hrs.
The course integrates the most important concepts of auditing as well as certain practical aspects in a logical manner to assist students in understanding audit decision making and evidence accumulation. Coverage includes, but is not limited to, concepts of evidence accumulation; analytical procedures as audit tools; probability and risk and their effect on the audit; application of the auditing process to the sales and collection cycle and other cycles; audit reports and requirements for completion of the audit cycle.
Prerequisites: ACC-212.

ACC-231. Government and Not-For-Profit Accounting. 3 Credits.
LECT 3 hrs.
This course involves financial analysis and reporting for government and not-for-profit organizations, including concepts, standards, and procedures designed to accommodate the uniqueness of the not-for-profit environment. The course deals specifically with financial accounting and reporting aspects applicable to state and local governments and other special districts and public authorities; and the federal government agencies, universities and hospitals.
Prerequisites: ACC-212.

ACC-232. Special Topics in Accounting. 3 Credits.
LECT 3 hrs.
This course offers students an opportunity to explore special topics or issues in Accounting. Topics may differ each time the course is offered and may include areas of negotiation or conflict resolution.

ACC-291. Special Topics in Accounting. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in accounting. Topics may differ each time the course is offered. Students should consult the department chairperson for further information.
BUS-111. Business Mathematics. 3 Credits.  
LECT 3 hrs.  
For Career Option students only. This course offers a foundation in the essential mathematics of business. Topics include fractions, percentages, banking records, simple and compound interest, discounts, retailing mathematics, inventory, depreciation and payroll. Mathematics of investments, finance and taxes may also be included.

BUS-112. Introduction to Business. 3 Credits.  
LECT 3 hrs.  
This course introduces both business and non-business majors to various fields of business study. Topics include foundations of business and economic systems, management and leadership styles, entrepreneurship, motivational theory and techniques, personnel and production management, accounting, information systems, business law, union/management relations and global issues. The course prepares students for higher-level business study and explores a variety of major options and career paths.

BUS-119. Business Information Systems and Applications. 3 Credits.  
LECT 3 hrs., LAB 1 hr.  
This course provides an introduction to the various technical tools available to help solve problems in the field of business technology. This is a hands-on laboratory course designed to provide the student with experience in using business calculators, Windows Operating System, Microsoft Office, Internet and marketing research tools. Special emphasis is placed on the accounting and other financial information reports using Microsoft Office’s Excel and Word programs.  
Additional Fees: Course fee applies.

BUS-132. Fundamentals of Electronic Commerce. 3 Credits.  
LECT 3 hrs.  
This course offers the basic and necessary elements of understanding electronic commerce/business. Students are exposed to the nuts and bolts of building successful e-business enterprises. Included are an understanding of the business and value propositions; e-commerce business models; strategies for successful implementation; an understanding of e-commerce technologies, infrastructure and applications; e-commerce business functionality integration; security risk management; and electronic payments issues. Students in this class are expected to build and present a prototype e-commerce business enterprise as a group project.

BUS-135. Introduction to International Business. 3 Credits.  
LECT 3 hrs.  
This is essentially a survey course to introduce the field of international business and trade. A broad range of topics prepares students for the rapidly evolving global business world and for advanced study in international business. Topics include introduction to and overview of international business, the global economy, international business environments, issues related to operating and managing an international business, and concepts and theories related to the global marketplace.

BUS-136. Personal Finance. 3 Credits.  
LECT 3 hrs.  
This course provides a practical introduction to personal finance and money management by focusing on realistic ways to effectively manage and protect personal assets, minimize taxes and provide for a secure retirement. Students may design a personal budget and learn to make appropriate decisions with regard to savings, investments, insurance, credit protection and estate planning. Students evaluate the cost of borrowed money, real estate investments, effective use of credit, tax implications and the effects of the economy on personal financial decisions. The use of financial periodicals may be required.  
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-201. Human Relations in Business. 3 Credits.  
LECT 3 hrs.  
This course provides a broad perspective dealing with human relations from the viewpoint of the manager. It treats the human aspect as it is encountered in the business organization. The behavior of individuals in interpersonal, intergroup and interorganizational situations as they relate to work is also studied.

BUS-205. Landscape Specifications and Estimating. 3 Credits.  
LECT 3 hrs.  
Required for students in Landscape Management and Design Agribusiness and Turf and Turfgrass Management and recommended for others with an interest in landscape maintenance or landscape design and installation. The course focuses on developing systems for the identification of costs associated with the preparation of landscape estimates and bids. Topics include pricing, budgeting, understanding and writing specifications; contracts and related issues; insurance and accounting applications for landscape businesses; estimating with an emphasis on cost-finding processes; and client and employee relations.

BUS-211. Money and Banking. 3 Credits.  
LECT 3 hrs.  
This course analyzes the organization and operation of our financial system. Included in the study are the money and capital markets, commercial banking and other financial institutions such as commercial finance companies. The relationship between financial and economic activity, including monetary and fiscal policy, is shown.  
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-212. Principles of Finance. 3 Credits.  
LECT 3 hrs.  
This course is a study of principles and practices followed in the financial organization and operation of a business organization including financing new and growing businesses, sources of capital, banking and credit accommodations, and the handling of other financial matters.  
Prerequisites: ACC-111 and ENG-025 or non-course equivalent.

BUS-213. Business Law I. 3 Credits.  
LECT 3 hrs.  
This course is a basic study of the fundamentals of legal liability, the growth of our legal system, and the legal rights, duties and obligations of the individual. Specifically covered are law and society, contracts, agency, and employment. Where applicable, the Uniform Commercial Code is used as the basis for statutory interpretation.
BUS-214. Business Law II. 3 Credits.
LECT 3 hrs.
This course is a further study of business law, covering personal property, bailments, sales, partnerships, commercial paper, secured transactions and insurance. Where applicable, the Uniform Commercial Code is used as the basis for statutory interpretation. **Prerequisites:** BUS-213.

BUS-215. Principles of Management. 3 Credits.
LECT 3 hrs.
This course is a study of the basic managerial functions of planning, organizing, staffing, directing and controlling. Emphasis is placed on the theory of management, organization and executive leadership. Case studies of actual business situations present problems requiring executive decisions for solution. **Prerequisites:** ENG-111, ENG-112 and BUS-119.

BUS-218. Investment Principles. 3 Credits.
LECT 3 hrs.
This course introduces students to basic types of investment alternatives focusing on the mechanics of investing including online investing, researching and interpreting financial information, understanding risk/return tradeoffs, and reviewing investment strategies associated with various stock orders. The course offers a thorough review of the primary and secondary securities markets, securities regulations and ethics, and a general understanding of the impact of the economy and the Federal Reserve on investment decisions. The course objective is to develop students into independently sophisticated investors through a practical hands-on approach. The use of financial periodicals may be required. **Prerequisites:** MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-219. Small Business Operations. 3 Credits.
LECT 3 hrs.
This course focuses on all aspects of operating an existing business and in starting a new venture, culminating in the preparation and simulated execution of a business plan. Study includes evaluations of both new and existing businesses, financing approaches, forms of ownership, traditional and Internet marketing and advertising, directing, staffing, purchasing, risk mitigation, cash management, tax obligations, bootstrapping techniques, and financial and breakeven evaluation. This is a hands-on pragmatic approach to small business management.

BUS-222. International Finance. 3 Credits.
LECT 3 hrs.
International Finance provides a basic understanding of the relationship between the international business environment and the international financial markets. Topics to be covered include: international flow of funds, international capital markets, international monetary system, exchange rate behavior, and financial management of the multinational firm. **Prerequisites:** ENG-025 or non-course equivalent and ECO-211.

BUS-224. Cooperative Work Experience-Business. 3 Credits.
COOP 3 hrs.
This course provides students enrolled in the Business Career curriculum with job-oriented training and practical work experience in a work environment prior to permanent employment. The course may be taken in fulfillment of a business elective in the Business Career curriculum. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their third semester. **Prerequisites:** Permission of department chair
**Corequisites:** BUS-225.

BUS-225. Cooperative Work Experience Business-Related Class. 1 Credit.
LECT 3 hrs.
A supplement to the cooperative work experience program, this course provides a variety of experiences to further develop students’ career development and occupational adjustment. It also develops positive points of view toward human relationships and the responsibilities of both the employee and the employer. **Prerequisites:** Permission of department chair
**Corequisites:** BUS-224.

BUS-226. Internship Work Experience-Business. 3 Credits.
LECT 3 hrs.
This course provides students enrolled in the Business curriculum with job oriented training and practical work experience in a non-paid work environment prior to permanent employment. The course may be taken in fulfillment of a business elective. Students desiring to participate in this experience should make their intentions known to the department chair during the prior semester. **Prerequisites:** Permission of department chair
**Corequisites:** BUS-225.

BUS-232. Electronic Commerce Management. 3 Credits.
LECT 3 hrs.
This course includes features and characteristics that will provide an understanding of the essential elements of managing e-business functions, processes and integrated information systems. Included are: the structure, functions and management of digital organizations, systems integration and collaborative applications, workflow and process management, customer relationship management, enterprise resource planning, records and data management, risk management, business process re-engineering as well as strategic management issues and applications.

BUS-234. Supply Chain Management. 3 Credits.
LECT 3 hrs.
This course introduces the concepts of supply chain management. The student comes to understand how good supply chain management can be a competitive advantage of a firm. Within the strategic framework, facilities, inventory, transportation and information are identified as key drivers of supply chain management.
BUS-235. Investment Analysis. 3 Credits.
LECT 3 hrs.
Builds on the knowledge learned in the Investment Principles course with more in-depth security analysis. The course takes a strategy approach to investing by employing hands-on techniques for profitable decision making within a diversified portfolio. Learning risk/return tradeoffs, reducing risk through portfolio analysis under particular economic conditions, exploring fundamental and technical analysis, and utilizing derivatives by adding futures and options to a portfolio allows the student to become a more knowledgeable decision maker. Other topics include the time value of money, financial ratio analysis, and the use of real estate alternatives and limited partnerships in portfolio creation. The use of financial periodicals is required.
Prerequisites: BUS-218.

BUS-240. Small Business Planning and Finance. 3 Credits.
LECT 3 hrs.
This course focuses on the planning and financing of small business ventures. Included is the development of a business plan. This includes market analysis and a resulting marketing plan, a comprehensive operations plan and the development of financial projections. Attention also is placed on attracting seed and growth capital from such sources as individuals, family, venture capital, investment banking and commercial banks. Bootstrapping or creative ways for obtaining greater impact of available funds is introduced. The end of the business cycle, business valuation and exit strategies are fully explored.
Prerequisites: ENG-025 or non-course equivalent and MAT-016 or non-course equivalent.

BUS-242. Customer Relations. 3 Credits.
LECT 3 hrs.
This course focuses on customer relations as the measure of present and future business success. It begins with describing how business develops its business strategy on identified customer base. Recognizing the challenge of meeting customer expectations, the course defines customer satisfaction and introduces approaches to move from satisfying the customer to delighting the customer. A comprehensive customer relations process, customer relationship management, is introduced and its role discussed in the electronic business age.

BUS-291. Special Topics in Business. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in business areas of study. Topics may differ each time the course is offered. Students should consult with the Department of Business Administration chair for additional information. Prerequisites may be required dependent on topic of study.

BUS-292. Special Topics in Business. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in business areas of study. Topics may differ each time the course is offered. Students should consult with the Department of Business Administration chair for additional information. Prerequisites may be required dependent on topic of study.
Corequisites: BUS-224.
Chemical Technology

Associate in Applied Science Degree

Note: Chemical technology students requiring developmental courses in math must complete MAT-016 Intermediate Algebra prior to taking courses in Biology.

The chemical industry, a major New Jersey employer, is important for the creation and manufacture of such basic items as pharmaceuticals, cosmetic/personal care products, gasoline, plastics, fabrics and foods. Chemical Technology is an ideal program of study for students who are interested in this field and desire a more practical hands-on approach to learning. Students learn to use GC, HPLC, FTIR and other state-of-the-art equipment, as well as modern wet chemical techniques.

Graduates of the Chemical Technology program with an Associate in Applied Science degree have the theoretical and technical expertise to be employed at the technician level in research laboratories, quality control labs, pilot plants, chemical production and environmental-monitoring facilities and testing labs. Graduates can also choose to transfer to a four-year institution for a baccalaureate degree in chemistry or related scientific disciplines. Courses in this program are also ideal for retraining purposes.

The Cooperative Education (co-op) program provides students the opportunity to gain valuable, practical skills working in industry as part of their educational experience.

For more information, visit the Chemical Technology (http://www.ccm.edu/academics/degrees/chemicaltech.aspx) website.

Degrees

- AAS Chemical Technology (p. 28)
- AAS Chemical Technology - Environmental Science Option (p. 28)

AAS Chemical Technology
(P3450)

General Education Foundation

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<td>ENG-112  English Composition II</td>
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<tr>
<td>MAT-124  Statistics</td>
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<tr>
<td>Social Science or Humanities</td>
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<td>General Education Electives</td>
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Chemical Technology Core

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<td>CHM-127  General Chemistry II - Lecture</td>
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<td>CHM-128  General Chemistry II - Laboratory</td>
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<td>BIO-123  Cell Biology (Fall)</td>
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Total Credits 44

For more information, visit the Chemical Technology (http://www.ccm.edu/academics/degrees/chemicaltech.aspx) website.

Environmental Science
An Option within Chemical Technology
(P3451)

Note: Environmental Science students requiring developmental courses in math must complete MAT-016 Intermediate Algebra prior to taking courses in Biology and Chemistry.

The Environmental Science option is a two-year degree program designed for students who plan to enter the rapidly growing field of environmental science. The curriculum stresses the interdisciplinary nature of ecological problems and provides students with a wide range of courses necessary to prepare them for the environmental challenges of the 21st century.

Graduates have the theoretical and technical expertise required to enter positions at the technician level in diversified fields such as water pollution control; environmental analysis of water, air and soil; hazardous waste management; site remediation (cleanup); and a variety of other areas. The program also provides several introductory courses which may be transferable to a four-year degree program in environmental science.

County College of Morris is a member of the New Jersey Sea Grant Consortium, a private, nonprofit organization comprised of member colleges, universities and private groups interested in marine affairs. Students may enroll in a variety of summer courses, including BIO-260 Introduction to Marine Biology and BIO-262 Introduction to Marine Sciences, which may be used as electives in the Environmental Science option with the permission of their academic advisors. Courses are offered at the New Jersey Sea Grant Laboratory at Sandy Hook during the summer. Other courses include field trips or the use of equipment and facilities of the consortium.

General Education Foundation

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<td>ENG-112  English Composition II</td>
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County College of Morris

Social Science or Humanities 3
Choose from General Education course list
General Education Electives 8
Choose from General Education course list
General Education Foundation Credits 20

Environmental Science Core

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<td>BIO-123</td>
<td>Cell Biology (Fall)</td>
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<td>BIO-121</td>
<td>General Biology I</td>
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<td>BIO-202</td>
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or CHM-219 Quantitative Chemical Analysis

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<td>CHM-136</td>
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<td>CHM-210</td>
<td>Essentials of Organic Chemistry (Summer)</td>
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<tr>
<td>CHM-220</td>
<td>Instrumental Methods of Analysis (Spring)</td>
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<td>PHY-103</td>
<td>Concepts of Physics</td>
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Free Electives 4

Environmental Science Core Credits 44-45

Total Credits 64-65

Students should consult with their academic advisors when selecting free electives.

Science courses completed by students prior to entering the Environmental Science option must have been taken within the last seven years. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

Faculty

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Courses

BIO-100. Elements in Biology. 3 Credits.
LECT 3 hrs.
A foundation providing necessary skills and concepts needed to pursue the biology major. The course stresses skill development in areas such as communication, classification, inquiry, mathematical measurement, data analysis and report writing. Skills then are applied to the study of the cell cycle and diverse life processes.

Additional Fees: Course fee applies.
BIO-101. Anatomy and Physiology I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
The structure and function of the human organism is studied. Special emphasis is given to interrelationships of organs and organ systems. Cellular morphology and function are included for an appreciation of the adult form. The student is introduced to basic chemistry, the cell, basic tissues, the skeletal, muscular and nervous systems. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course. 
Prerequisites: Placement basis or ENG-007 or ENG-025 or ENG-022 and MAT-016
Additional Fees: Course fee applies.

BIO-102. Anatomy and Physiology II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A continuation of Anatomy and Physiology I. The circulatory, respiratory, digestive, urinary, endocrine and reproductive systems are studied. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course. 
Prerequisites: BIO-101 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-115. Human Sexuality. 3 Credits.
LECT 3 hrs.
Provides an introductory knowledge of the basic topics in human sexuality. Topics presented are the basic structure and function of the male and female reproductive systems, sexual response and behavior, pregnancy, birth control, sexual disease, atypical behavior, sex and the law, and sexuality through the life cycle. Films, slides, panel discussions and guest lectures are employed to enhance the educational process. The course is open to all students at the college as a free elective and does not fulfill any science requirement.

BIO-116. Animal Control Officer’s Training Course. 3 Credits.
LECT 3 hrs.
Preparation for New Jersey State Certification as an Animal Control Officer. Topics include legal authority for animal control (federal, state, local); courtroom procedures; animal behavior, capture and handling; disease recognition, prevention and control; shelter operations; and community relations.

BIO-118. Biomedical Ethics. 3 Credits.
LECT 3 hrs.
This course introduces students to major ethical issues in areas of biomedicine in contemporary society. The focal point of the course is a process for ethical reasoning and ethical decision making. Students identify ethical problems, assess information relevant to decisions, identify stakeholders affected by decisions, recognize competing values, consider options, make decisions and realize the consequences of decisions. The process is applied to issues in such fields as genetics, death and dying, reproduction, public policy and medical decision making. This course does not fulfill a laboratory science requirement.

BIO-121. General Biology I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include the fundamentals of chemistry, cell structure and function, and the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course. 
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-122. General Biology II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A continuation of General Biology I. Topics include homeostasis, animal reproduction, embryonic development, genetics, ecology and evolution. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course. 
Prerequisites: BIO-121 or BIO-180 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-123. Cell Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall semester only. An introduction to the fundamentals of cellular biology. Topics covered are the nature of biologically important molecules, molecular synthesis, energetics, cellular structure and function, cell reproduction, heredity, and basic laboratory techniques for cellular study. All remedial courses must be completed prior to taking this course. 
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-127. Biology of Environmental Concerns. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A survey of ecological issues from a variety of perspectives. The course provides an awareness of environmental problems, a knowledge of cause-and-effect relationships of diverse activities on this planet and a basis for making informed judgments about the potential solutions to environmental problems. Major topics include the roots of our environmental problems, introductory concepts in ecology, human population dynamics and control, food resources and world hunger, renewable and nonrenewable energy resources, mineral resources and solid waste, wild plant and animal resources, water resources, air pollution, water pollution, pesticides and pest control, economics, politics and the environment, world views, and ethics and the environment. This course fulfills the general education laboratory science requirement. 
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025
Additional Fees: Course fee applies.
BIO-121. Concepts in Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A basic introduction to the study of biological science designed for the non-science major. Topics include the hierarchy of organization, life processes, cell theory, human genetics, theories of evolution, biochemistry and some principles of ecology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022
Additional Fees: Course fee applies.

BIO-123. Human Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. An introduction to the body systems and the factors which affect human physiology. Lectures include the basic anatomy and physiology of the major systems plus discussion topics emphasizing nutrition, exercise, sexuality, genetic engineering and recent advances in biotechnology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022
Additional Fees: Course fee applies.

BIO-180. General Biology I - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include fundamentals of chemistry, cell structure and function, the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
Prerequisites: Permission of department chair or honors advisor
Additional Fees: Course fee applies.

BIO-181. General Biology II - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. A continuation of BIO-180 General Biology I Honors. Topics include homeostasis, animal reproduction and embryonic development, genetics, ecology, and evolution. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
Prerequisites: BIO-180 or BIO-121 and permission of honors advisor
Additional Fees: Course fee applies.

BIO-201. Genetics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. Provides the student with a broad knowledge of genetics from the molecular to the organismal level. Topics covered include the molecular and Mendelian concepts of heredity and their relationship to cell function, development, population changes and evolution, and biotechnology. Laboratory exercises emphasize a variety of techniques and skills used in genetic research and testing.
Prerequisites: BIO-121 and BIO-122 or BIO-180 and BIO-181 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-202. Ecology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. This course introduces the basic fundamentals of ecology, the study of the interrelationships between organisms and their environment. Topics include an introduction to ecosystem structure and function, abiotic factors in ecosystems, energy flow and mineral cycling, population and evolutionary ecology, community ecology, a comprehensive survey of aquatic and terrestrial ecosystems, and human ecology. Laboratories and field trips are designed to introduce students to techniques used in basic ecological research.
Prerequisites: BIO-121 or BIO-180 or LHT-110 (minimum grade of C)
Additional Fees: Course fee applies.

BIO-215. Microbiology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of microorganisms, including viruses, bacteria, fungi, protozoa and algae. Topics covered include microbial anatomy, physiology, genetics, ecology and methods of control. Research methods and modern immunological concepts also are discussed. Laboratory exercises in basic microbiological techniques and the study of living microorganisms are designed to supplement the theory presented.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022 and BIO-101 or BIO-121 or BIO-123 or BIO-180 (minimum grade of C) and CHM-117 or CHM-125 and CHM-126 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-223. Cell and Molecular Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of biological molecules and their functions. Emphasis will be placed on the mechanism and regulation of macromolecule synthesis. Laboratory exercises will focus on instrumentation and techniques used in biological research.
Prerequisites: BIO-121 or BIO-123 and CHM-125 and CHM-126
Additional Fees: Course fee applies.

BIO-226. Cooperative Industrial Experience - Biology. 3 Credits.
COOP 3 hrs.
On-site work hours 300. An opportunity for selected students enrolled in the Biotechnology program to obtain job-oriented laboratory training in an industrial environment prior to career employment. Students desiring to participate in this experience should make their interest known to the department chair or the Office of Career Services and Cooperative Education by the end of their second semester.
Prerequisites: Permission of department chair.

BIO-233. Independent Study in Biology. 3 Credits.
LECT 3 hrs.
An opportunity for selected students to participate in biological research under close supervision of the biology faculty. Interested students should make their interest known early in the prior semester to the department chair, who will familiarize the students with criteria for selection and the steps to be taken to gain entrance to this course. This course does not fulfill any of the science requirements in biology but is offered as a free elective.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
BIO-260. Introduction to Marine Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer semester only. A field- and laboratory-oriented undergraduate course covering the biology and characteristics of marine animals and plants. The course is designed to provide experience in collecting and identifying examples of local marine organisms. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey
Prerequisites: BIO-121 and permission of department chair
Additional Fees: Course fee applies.

BIO-262. Introduction to Marine Sciences. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer Semester only. A field-oriented, lower-division undergraduate course covering the principal disciplines in the marine sciences. The course is designed to help the student evaluate his or her interest in the marine science world. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

BIO-270. Immunology. 3 Credits.
LECT 3 hrs.
An introductory-level course that covers the basic immunologic concepts of cells and humoral products of the immune system, the genetic control of immunity and generation of diversity, and antigen-antibody reactions. These basic concepts are correlated to clinical applications as they relate to laboratory testing manifestations of disease, such as autoimmunity, hypersensitivity, transplantation, tumor immunology and immunodeficiency.
Prerequisites: BIO-215 (Minimum grade C).

BIO-274. Pathophysiology. 3 Credits.
LECT 3 hrs.
Pathophysiology is a course which studies the physiological alterations associated with common disease processes which affect human beings across the lifespan. Common diseases of the major organ systems are covered as well as such general issues as infection, neoplasm, inflammation, fluid and electrolyte imbalance, trauma, and shock.
Prerequisites: BIO-101 and BIO-102 and CHM-117.

BIO-295. Special Topics in Biology. 4 Credits.
LECT 4 hrs.
An examination of selected topics or issues in biology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A introductory course in Biology
Additional Fees: Course fee applies.

CHM-100. Elements of Chemistry. 3 Credits.
LECT 3 hrs.
A one-semester, introductory 3-credit, non-laboratory course designed for students with little or no background in chemistry. Emphasis is on preparing students for General Chemistry and Introductory Chemistry courses. The course encompasses chemical principles and calculations with a brief review of algebra.
Prerequisites: MAT-016.

CHM-105. Forensic Science. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. An introduction to the applications of the physical and biological sciences in analyzing and evaluating physical evidence as related to crime and the law.
Additional Fees: Course fee applies.

CHM-117. Introductory Chemistry Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
An introduction to the basic concepts of inorganic, organic and biochemistry. The emphasis is on the relationship of these concepts to physiological chemistry and living systems. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 (minimum grade of C) and ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-118.

CHM-118. Introductory Chemistry Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-117. Required for Landscape and Horticultural Technology, liberal arts majors and some Allied Health programs.
Prerequisites: Placement basis or MAT-016 and ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-117
Additional Fees: Course fee applies.

CHM-125. General Chemistry I - Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
A study of the fundamental principles of chemistry and their application to chemical reactions. Topics include the structure of the atom, concepts of matter, mass relationships for pure substances and chemical reactions, solutions, electronic structure, the chemical bond, nuclear reactions and gases. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-126.

CHM-126. General Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-125. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-125
Additional Fees: Course fee applies.

CHM-127. General Chemistry II - Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
A continuation of General Chemistry I with emphasis on chemical equilibrium and energy changes in chemical reactions. Also included are acids, bases, buffers, chemical thermodynamics, kinetics, qualitative analysis and electrochemistry. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 (minimum grade of C), CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-128.
CHM-128. General Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-127. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 and CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-127
Additional Fees: Course fee applies.

CHM-136. Environmental Regulation. 3 Credits.
LECT 3 hrs.
This course is an overview of critical environmental issues encountered by industry from a regulatory perspective. Various federal and New Jersey state regulations pertaining to air, water, hazardous waste and hazardous materials management are investigated. Students acquire knowledge on how industry complies with the diversity of regulatory requirements. Students are exposed to examples of instances where industrial non-compliance with applicable regulations has led to deleterious environmental and occupational health effects. Current issues and their significance to environmental and occupational health are discussed including, Clean Water Act, Clean Air Act, Environmental Cleanup and Responsibility Act (ECRA), Resource Conservation and Recovery Act (RCRA), Occupational Safety and Health Act (OSHA), Toxic Substance Control Act (TSCA), Asbestos, indoor air quality and underground storage tanks.
Prerequisites: BIO-123 and CHM-125.

CHM-204. Principles of Occupational Health and Safety. 3 Credits.
LECT 3 hrs.
A survey course providing an overview of industrial hygiene and the roles that the industrial hygiene professional plays in recognizing, evaluating and controlling hazards in the workplace. This course provides an introduction to the qualitative and quantitative issues essential to comprehend occupational safety and health principles. Case studies and hands-on exercises are utilized to stress key concepts.

CHM-210. Essentials of Organic Chemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer Semester only. This course is the study of the basic principles of structure, reactivity and nomenclature in organic chemistry. The laboratory develops basic work skills in the types of experiments performed in a typical organic chemistry laboratory with emphasis on the safe handling of laboratory chemicals and the proper presentation of experimental results.
Prerequisites: CHM-117, CHM-118 or CHM-127, CHM-128 (minimum grade of C for all prerequisites)
Additional Fees: Course fee applies.

CHM-212. Biochemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. An introduction to physiological chemistry. Lectures cover amino acids, proteins, lipids, nucleic acids, carbohydrates, molecular genetics, energetics and metabolic pathways. Lab reinforces concepts covered in lecture. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-117 or CHM-125
Additional Fees: Course fee applies.

CHM-219. Quantitative Chemical Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Fall Semester only. Principles of modern quantitative methods in chemistry, including the study of chemical equilibria, solubility, acidity and complex formation. The laboratory work involves practical applications of inorganic and organic analysis including volumetric, gravimetric, chromatographic and instrumental techniques. Emphasis is placed on the statistical treatment of data and report writing. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127 (minimum grade of C) or equivalent
Additional Fees: Course fee applies.

CHM-220. Instrumental Methods of Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Spring Semester only. This survey course covers theory and applications of modern instrumentation utilized to solve problems in chemical analysis. Laboratory work involves hands-on experience utilizing instruments such as gas(GC), liquid(HPLC) and ion chromatography; spectrophotometric methods including visible, ultraviolet, infrared(FTIR)and atomic absorption; ICP and other methods, including ion selective electrode methods; and electrophoretic methods including capillary electrophoresis(HPCE). Emphasis is placed on the comparison of methods, the collection and interpretation of laboratory data, technical report writing and record keeping. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127 or equivalent (minimum grade of C)
Additional Fees: Course fee applies.

CHM-228. Cooperative Industrial Experience - Chemical Technology. 3 Credits.
COOP 3 hrs.
This course provides selected students enrolled in the Technology programs with job-oriented laboratory training and practical work experience in an industrial environment prior to career employment. The course may be taken as a three-credit technical elective. Students desiring to participate in this experience should make their interests known to the department chair by the end of their second semester. Fourth semester status in Chemical Technology, Environmental Science Option or Biotechnology programs required.
Prerequisites: Permission of department chair.

CHM-231. Organic Chemistry I - Lecture. 3 Credits.
LECT 3 hrs.
This course is an introduction to the chemistry of carbon compounds. Topics include a study of the fundamental concepts of structure and stereochemistry, physical properties of organic compounds and a functional approach to the interpretation of organic reactions. This course is designed for majors in Biology, Chemistry, Pharmacy, and for students preparing for medical, dental and veterinary schools. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127, CHM-128 (minimum grade C)
Corequisites: CHM-232.
CHM-232. Organic Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments stress techniques involved in the synthesis and purification of typical organic compounds using both macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Corequisites: CHM-231
Additional Fees: Course fee applies.

CHM-233. Organic Chemistry II - Lecture. 3 Credits.
LECT 3 hrs.
A continuation of the study of organic compounds with further study of functional groups, reaction mechanisms including nucleophilic substitution and elimination reactions, and infrared and nuclear magnetic resonance spectroscopy. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 (Minimum Grade of C)
Corequisites: CHM-234.

CHM-234. Organic Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments involve the multi-step synthesis of organic compounds, which illustrate the principles of CHM-233, using macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 and CHM-232
Corequisites: CHM-233
Additional Fees: Course fee applies.

CHM-235. Independent Study in Chemistry. 3 Credits.
LECT 3 hrs.
This course is an opportunity for selected students to participate in independent research under close supervision of a Chemistry faculty member. Interested students should make their interests known early in the prior semester to the department chair who will detail the criteria for selection.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CHM-295. Special Topics in Chemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An examination of selected topics or issues in chemistry. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Chemistry and permission of department chair
Additional Fees: Course fee applies.

CHM-296. Special Topics in Chemistry. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in chemistry. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Chemistry and permission of department chair.
Communication

Communication majors study a variety of offerings in liberal arts and technical communications leading to an Associate in Arts degree. The program provides a comprehensive overview of popular and evolving fields of communication and media literacy.

Students learn communication theory as it relates to culture, aesthetics and society. To graduate, students must show proficiency in written, oral and interpersonal communication, as well as technological competencies.

The program prepares students for transfer to four-year colleges and universities as communication majors or one of the following specializations: media, journalism, speech, film, radio and TV, new media, public relations or advertising.

For more information, please visit the Department of Communication (http://www.ccm.edu/academics/divdep/liberalarts/communication/default.aspx) webpage.

Degrees

AA Communication

(P1129)

General Education Foundation

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<td>Communication</td>
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<td>ENG-111</td>
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<td>ENG-112</td>
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<td>COM-109</td>
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<td>Math, Science, Technology</td>
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<td>or MAT-120</td>
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General Education Foundation Credits 45

Core Courses

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Core Courses Credits 18

Total Credits 63

1 Students should consult their academic advisors when selecting these courses.

Faculty

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B.A., Rutgers University
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Courses

COM-101. Introduction to Communication. 3 Credits.
LECT 3 hrs.
Survey of the field of communication within a variety of contexts including: Interpersonal, Group, Organizational, Mass Media, Intercultural and International Communication.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

COM-102. Advertising and Society. 3 Credits.
LECT 3 hrs.
This is a survey course that follows the advertising industry from the early days of the Industrial Revolution through modern social campaigns. There will a strong emphasis on the cultural and societal effects of advertising messages on mass markets. There will also be a focus on advertising as a form of social communication, which has imbedded impacts on socio-economic, political and global communication. Students will acquire skills in media literacy and ethical reasoning with respect to advertising campaigns. By the end of the course students will be able to identify the current challenges to consumers and the advertising industry.
Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.

COM-103. Introduction to Public Relations. 3 Credits.
LECT 3 hrs.
This course is a survey of the principles and practices in public relations. Students gain an understanding of the history, development and globalization of PR, the impact of PR criticism, the techniques and tactics of PR practitioners. They learn the concepts of "publics" and professionalism. Special emphasis is placed on the comprehension of the laws and ethics mandated for the PR industry and the goals and objectives necessary to the future credibility of PR.
Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.

COM-104. Interpersonal Communication. 3 Credits.
LECT 3 hrs.
Students in this course discover how to communicate effectively in everyday relationships through the study of both theoretical frameworks and practical application. Topics include self-perception, cultural influences, verbal and nonverbal messages, conflict management, as well as an in-depth look at communication within the family unit, friendships, romantic partners and the workplace.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

COM-105. Media Literacy. 3 Credits.
LECT 3 hrs.
Media Literacy prepares students to better understand the 21st century media environment. Topics covered include media form, media content, media effects and influence, and media industries. There will be a particular focus on developing stronger critical and analytical skills to better use media for personal and professional benefit. We will investigate media through several perspectives with a concentration on how media works and how to better navigate and manage the information we receive.
Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.

COM-109. Speech Fundamentals. 3 Credits.
LECT 3 hrs.
This course introduces the fundamentals of organizing, outlining, and presenting narrative, informative and persuasive speeches. Specific attention is given to each student's verbal and nonverbal delivery in the communication of ideas, as well as to the development of creative abilities, critical insights and listening skills.
Prerequisites: Placement Basis or ENG-007 or ENG-022 or ENG-025.

COM-111. Introduction to Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in reporting and writing news stories across multimedia platforms. Topics include new media, writing, reporting, interviewing, researching, news judgment, Associated Press style, media ethics and media law. Students utilize computers in the classroom to research topics and complete assignments on deadline. The culmination of the course is an e-portfolio that utilizes a basic content management system and combines written articles with original photography. A one-time commitment of three hours of newspaper production is required.
Corequisites: ENG-111 or department permission.

COM-112. Advanced Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in news reporting, computer-assisted reporting and writing techniques. Specialized topics include profile writing, government meetings, statistics/budgets, police, weather, tragedies, global issues, news conferences, speeches, media ethics and media law. Students utilize computers in the classroom to research topics and complete assignments on deadline. New media is incorporated throughout the semester. A one-time commitment of 6 hours of newspaper production on campus is required.
Prerequisites: COM-111 or permission of department chair.

COM-115. Introduction to the Mass Media. 3 Credits.
LECT 3 hrs.
Introduction to Mass Media is a survey course focusing on the history and consequences of mass media for the individual, society and culture. Specific areas of emphasis include the historical development of media forms, theories concerning the effects of media, and the evolving future of media. Special attention will also be paid to current events in the media and their social consequences.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

COM-120. Broadcast Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in broadcast reporting, writing and editing. Students utilize traditional broadcast skills within a multimedia environment. Topics include broadcast writing techniques and style, newscast organization, photojournalism, social media, new media, broadcast stories for online journalism, media ethics and media law. Students write broadcast scripts, maintain blogs and produce timed newscasts.
Prerequisites: COM-111.
COM-209. Editing and Publication Design. 3 Credits.
LECT 3 hrs.
Instruction and practice in copy editing, layout, design, headline writing, photo editing, news evaluation, media ethics and media law. Students utilize computers, Adobe Photoshop and Adobe InDesign to complete assignments, and they help produce the student newspaper.
Prerequisites: COM-111 or permission of department chair.

COM-228. Cooperative Work Experience Communication. 3 Credits.
COOP 3 hrs.
This course provides students in the Communications curriculum with job-oriented training and practical experience in a real work environment. This course is designed to supplement the students academic coursework and to facilitate the career development and exploration process.
Prerequisites: Permission of department chair
Corequisites: COM-229.

COM-229. Coop. Work Experience - Related Class. 1 Credit.
LECT 1 hr.
Prerequisites: Permission of Coordinator
Corequisites: COM-228.

COM-230. Communications Internship. 3 Credits.
LECT 3 hrs.
The Communication Internship offers practical experience working part-time for an approved communication agency, organization or business under the supervision of a Communication faculty. Alternatively, it can be used to complete a significant research project under the guidance of a Communication faculty member. Students must have second year status, GPA of 3.5 or higher.
Prerequisites: Permission of department chair.

COM-234. Introduction to Film. 3 Credits.
LECT 3 hrs.
Through the study of representative major works of world cinema, students are introduced to the history and development of film as a creative medium or artistic expression and mass communication. Topics include production practices, cinema as an industry, the relationship between history and cinema, the psychology of cinema, and socio-cultural factors related to cinema. Students are encouraged to approach film analytically and critically, to consciously examine the language and aesthetic forces of cinema, and to expand cinematic interest into realms beyond the Hollywood mainstream production.
Prerequisites: Placement basis or ENG-007 or ENG-025 or ENG-022.

COM-291. Special Topics in Communication. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Communication. Topics may differ each time the course is offered. Students should consult the assistant chair for further information.
Prerequisites: An introductory course in Communication.

COM-292. Special Topics in Communication. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Communication. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Communication.
Computer Information Systems

Associate in Applied Science Degree

The Information Technology industry is constantly advancing. Recent innovations in mobile and web technologies; information security; wireless networking; visual, object-oriented programming and design; and videogame and simulation technology require state-of-the-art curricula and laboratories. To keep abreast, the Department of Information Technologies offers students four Associate in Applied Science (AAS) program options.

The Administrative Support option provides training to those individuals seeking a career in today's high-technology environment in a support function. Students study business applications, digital communication, operating systems and utilities, web page design and multimedia applications. They have an option to choose concentrations in business, law, media, medical, security or web development. Graduates may find employment as administrative assistants, office assistants, conference planners, office managers, data-entry specialists, receptionists, front desk assistants, records specialists or administrative clerks.

The Game Development option offers students interested in the computer game and simulation fields a solid background in the foundations of hardware/software, operating systems, programming, systems analysis and design, data structures and algorithms, advanced math, physics, and animation. Specialized courses in game design, game programming and game production provide students with relevant skills and experience with industry standard tools and techniques. Students create a game design, build game programs using a popular game engine, and, in a capstone course, produce a working game with a team of student developers and artists.

The Management Information Systems option focuses on integrating information technology solutions and standard processes to meet the information needs of businesses. Students study visual and high-level programming languages, business application programs, databases, operating systems, systems analysis and design, and business-related courses. By designing and programming classic business application programs, graduates are well prepared for entry-level business analyst/programmer positions.

The Technical Support option is for students interested in the support functions of the information technology infrastructure of business organizations. Students study operating systems and utilities, business application programs, databases, web technology, programming and network concepts. The knowledge and practical experiences students gain equip them for support positions in the information technology field.

The selection of a particular option should be made after consultation with an Information Technologies department faculty advisor.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements for these options and visit the New Jersey Transfer (http://www.njtransfer.org) website.

For more information, visit the Department of Information Technologies (http://www.ccm.edu/academics/divdep/BMET/infotech) website.

Degrees

- AAS Computer Information Systems - Administrative Support Option (p. 38)
- AAS Computer Information Systems - Game Development Option (p. 38)
- AAS Computer Information Systems - Management Information Systems Option (p. 39)
- AAS Computer Information Systems - Technical Support Option (p. 39)

Administrative Support

A Computer Information Systems AAS Degree Option

(P3503)

<table>
<thead>
<tr>
<th>General Education Foundation</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Communication</td>
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<tr>
<td>ENG-111  English Composition I</td>
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<tr>
<td>ENG-112  English Composition II</td>
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<td>Math-Science-Technology</td>
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<tr>
<td>MAT-130  Probability and Statistics</td>
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<tr>
<td>Humanities</td>
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<td>General Education Electives</td>
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<td>PSY-113  General Psychology</td>
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<td>SOC-120  Principles of Sociology</td>
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<td>Laboratory Science Elective</td>
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<table>
<thead>
<tr>
<th>Administrative Support Core</th>
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<tbody>
<tr>
<td>BUS-112  Introduction to Business</td>
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<tr>
<td>CMP-200  Computer Operating Sys &amp; Utilities</td>
<td>3</td>
</tr>
<tr>
<td>CMP-126  Computer Technology and Applications</td>
<td>4</td>
</tr>
<tr>
<td>CMP-205  Database Programming (MS Access)</td>
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<td>CMP-207  Elec. Spreadsheets (ms Excel)</td>
<td>3</td>
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<tr>
<td>CMP-239  The Internet and Web Page Design</td>
<td>3</td>
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<tr>
<td>MED-110  Multimedia I</td>
<td>3</td>
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<td>CMP, MED, TEL or BUS Electives</td>
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<td>Technical Concentrations</td>
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<tr>
<td>Free Elective</td>
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<td>Administrative Support Core Credits</td>
<td>37-38</td>
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</tbody>
</table>

Total Credits: 60-61

Game Development

A Computer Information Systems AAS Degree Option

(P3504)
Management Information Systems
A Computer Information Systems AAS Degree Option
(P3501)

General Education Foundation
Communication 6
   ENG-111 English Composition I
   ENG-112 English Composition II
Math-Science-Technology 3-4
   MAT-124 Statistics
   or MAT-130 Probability and Statistics
Humanities 3
   Choose from General Education course list
General Education Electives 10
   SOC-120 Principles of Sociology
   ECO-211 Principles of Economics I Macroeconomics
   Laboratory Science Elective
General Education Foundation Credits 22-23

Management Information Systems Core
ACC-111 Principles of Accounting I - Financial Accounting 3
CMP-123 Systems Analysis and Design 3
CMP-128 Computer Science I 3
CMP-129 Computer Science II 3
CMP-200 Computer Operating Systems and Utilities 3
CMP-205 Database Programming (MS Access) 3
CMP-207 Electronic Spreadsheets (MS Excel) 3
CMP-209 Introduction to UNIX 3
CMP-235 Advanced UNIX 3
CMP-237 Visual Basic (VB.Net) 3
CMP-239 The Internet and Web Page Design 3
Select one of the following: 3-4
   Computer Information Systems, Media
   or Telecommunications Systems Elective
Free Elective 3-4
Management Information Systems Core Credits 39-41
Total Credits 61-64

Technical Support
A Computer Information Systems AAS Degree Option
(P3502)

General Education Foundation
Communication 6
   ENG-111 English Composition I
   ENG-112 English Composition II
Math-Science-Technology 3-4
   MAT-124 Statistics
   or MAT-130 Probability and Statistics
Humanities 3
   Choose from General Education course list
General Education Electives 10
   SOC-120 Principles of Sociology
   ECO-211 Principles of Economics I Macroeconomics
   Laboratory Science Elective
General Education Foundation Credits 22-23

Technical Support Core
CMP-128 Computer Science I 3
CMP-123 Systems Analysis and Design 3
CMP-124 Network Security 3
CMP-200 Computer Operating Systems and Utilities 3
CMP-205 Database Programming (MS Access) 3
CMP-207 Electronic Spreadsheets (MS Excel) 3
CMP-209 Introduction to UNIX 3
CMP-237 Visual Basic (VB.Net) 3
CMP-239 The Internet and Web Page Design 3
CMP-244 Web Design II 3
TEL-110 Routing I (CISCO) 3
Select one of the following: 3
   Computer Information Systems, Media
or Telecommunications Systems Elective

Free Elective 3-4
Technical Support Core Credits 39-40
Total Credits 61-63

Technology-based courses taken by a student at least seven years prior to the time the student applies for graduation may not be applied to a degree or certificate within the Department of Information Technologies.

Certificates of Achievement

• Administrative Support - A Certificate of Achievement within Computer Information Systems (p. 40)
• Information Security - A Certificate of Achievement within Computer Information Systems (p. 40)
• System and Application Software - A Certificate of Achievement within Computer Information Systems (p. 40)
• Web Development - A Certificate of Achievement within Computer Information Systems (p. 40)

The Computer Information Systems Certificates of Achievement are designed for current or future professionals who wish to improve their technical knowledge and skills in computer-related areas. Each certificate includes a balance of theory and hands-on experience. The certificates are designed for full-time and part-time students who are working or plan to work in one of the following areas. It is possible for an individual to complete a certificate in two semesters.

Certificates of Achievement may also be offered on-site to local businesses and can be customized for completion in a shorter time period. Contact the Information Technologies department for additional information at 973-328-5780.

Administrative Support

A Certificate of Achievement within Computer Information Systems

(P0356)

CMP-126 Computer Technology and Applications 4
CMP-207 Elec. Spreadsheets (ms Excel) 3
Restricted Electives 1 6

Select two of the following:
BUS-112 Introduction to Business
BUS-201 Human Relations in Business
CMP-120 Foundations of Information Security
CMP-205 Database Programming (MS Access)
CMP-239 The Internet and Web Page Design
MED-110 Multimedia I
TEL-109 Introduction to Telecommunications

Total Credits 13

1 Students should consult their academic advisors when selecting the restricted electives.

Information Security

A Certificate of Achievement within Computer Information Systems

(P0354)

CMP-120 Foundations of Information Security 3
CMP-124 Network Security 3
CMP-125 Information Security Management Security 3

Restricted Electives 1 6

Select two of the following:
CJS-116 Introduction to Criminology
CJS-121 Criminal Justice System
CMP-123 Systems Analysis and Design
CMP-128 Computer Science I
CMP-160 Digital Forensics I
CMP-243 Ethical Hacking and Systems Defense
CMP-261 Digital Forensics II
CMP-292 Special Topics in Information Technology
CMP-293 Special Topics in Information Technology II
PHL-114 Ethics
TEL-110 Routing I (CISCO)
TEL-120 Routing II (CISCO)

Total Credits 15

1 Students should consult their academic advisors when selecting these courses.

System and Application Software

A Certificate of Achievement within Computer Information Systems

(P0351)

CMP-126 Computer Technology and Applications 4
CMP-205 Database Programming (MS Access) 3
CMP-207 Elec. Spreadsheets (ms Excel) 3
MED-110 Multimedia I 3

Computer Information Systems or Media Elective 1 3

Total Credits 16

1 Students should consult their academic advisors when selecting these courses.

Web Development

A Certificate of Achievement within Computer Information Systems

(P0352)

CMP-239 The Internet and Web Page Design 3
CMP-244 Web Design II 3
CMP-245 Web Design Tools 3

Restricted Electives 1 6

1 Students should consult their academic advisors when selecting these courses.
Select two courses from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CMP-120</td>
<td>Foundations of Information Security</td>
</tr>
<tr>
<td>CMP-128</td>
<td>Computer Science I</td>
</tr>
<tr>
<td>CMP-170</td>
<td>Mobile App Design</td>
</tr>
<tr>
<td>CMP-205</td>
<td>Database Programming (MS Access)</td>
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<tr>
<td>CMP-249</td>
<td>Advanced Web Programming</td>
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<tr>
<td>MED-110</td>
<td>Multimedia I</td>
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<td>MED-113</td>
<td>Multimedia II</td>
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<tr>
<td>MED-119</td>
<td>Digital Media Production</td>
</tr>
<tr>
<td>MED-220</td>
<td>Animation</td>
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<tr>
<td>MED-240</td>
<td>Advanced Animation</td>
</tr>
</tbody>
</table>

Total Credits 15

1 Students should consult their academic advisors when selecting these courses.

Courses

**CMP-101. Computer Information Literacy. 1 Credit.**
LECT 1 hr., LAB 1.5 hr.
This general education course provides students with an introduction to basic computer concepts that include learning the fundamentals of Windows, accessing the World Wide Web and using Microsoft Word. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.

**Prerequisites:** Placement basis or ENG-025 or ENG-022 or ENG-007

**Additional Fees:** Course fee applies.

**CMP-104. Internet Literacy. 3 Credits.**
LECT 3 hrs.
This general education course provides an in-depth study of the Internet and the knowledge necessary to be a contributing user of the World Wide Web. Topics covered include ISPs, browsers, search engines, netiquette, email, newsgroups, streaming media, file types, and societal issues and trends. This course is offered online. Not for Computer Information Systems majors.

**Additional Fees:** Course fee applies.

**CMP-108. Game Design Concepts. 3 Credits.**
LECT 3 hrs.
This course provides the student with an introduction to fundamental game design concepts. The range of topics includes game worlds and settings, character creation, storytelling, game audio, game art and animation, gameplay and user interface design. In addition, the history of the game industry, social impact and the future of gaming are discussed. Students analyze various games and genres and create their own game design document.

**Additional Fees:** Course fee applies.

**CMP-110. Introduction to Data Processing. 3 Credits.**
LECT 3 hrs.
Topics in this general education course include computer hardware and software concepts, application and systems software, the Internet and World Wide Web, data communications, and the social impact of computers. Problem solving using software application packages will be implemented. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.

**Additional Fees:** Course fee applies.

**CMP-120. Foundations of Information Security. 3 Credits.**
LECT 3 hrs.
This course provides a principled introduction to the field of information security. History, characteristics and models of information and computer security are explored. Topics such as risk management, logical and physical security, continuity, cryptography, and architecture are discussed. The CISSP knowledge domains are incorporated into the course content affording the student reinforcement and mastery of information security terminology and concepts.

**Additional Fees:** Course fee applies.
CMP-123. Systems Analysis and Design. 3 Credits.
LECT 3 hrs.
Techniques of object-oriented and structured systems analysis and design are examined in the context of the software development life cycle. Topics include project management, Unified Modeling Language (UML) diagrams, data flow diagrams, system flow charts, application and user-interface design. Class projects provide students with practice in using CASE tools in the analysis and design of application systems. Students participate in a semester-long team project to design an application.
Prerequisites: CMP-128 and one of the following: CMP-129, CMP-150, CMP-237, CMP-239
Additional Fees: Course fee applies.

CMP-124. Network Security. 3 Credits.
LECT 3 hrs.
This course provides an in-depth study of network attack techniques and methods to defend against them. Areas of study include communication security, infrastructure security, cryptography, and operational and organizational security as it relates to network hardware, software and data. Topics include authentication, attacks, virtual private networks, email protection, web security, wireless, firewalls, intrusion detection, cryptography, disaster recovery and computer forensics regarding networked systems. Using a hands-on approach, powerful tools to diagnose and correct security breaches are investigated and manipulated. This course is mapped to a vendor-neutral certification exam.
Additional Fees: Course fee applies.

CMP-125. Information Security Management Security. 3 Credits.
LECT 3 hrs.
This course entails identifying an organization's information assets and the development, documentation and implementation of policies, standards, procedures and guidelines that ensure confidentiality, integrity and availability of those assets. This course prepares students to understand the planning, organization and roles of individuals involved in security, to develop security policies, and to utilize management tools to identify threats, classify assets and rate vulnerabilities. A detailed, real-world security plan is developed using customized strategies with an in-depth study of PKI (Public Key Infrastructure).
Additional Fees: Course fee applies.

CMP-126. Computer Technology and Applications. 4 Credits.
LECT 3 hrs., LAB 2 hrs.
This general education course teaches: (1) basic computer-use concepts such as hardware and peripherals, file organization and management, and operating system use; (2) Internet use, browsers and search engines; (3) software applications including word processing, spreadsheet, electronic slideshow presentations, database use and calendaring; (4) netiquette, ethics and copyright policies; (5) downloading and installing software and plug-ins; (6) communications technologies including email, blogs and Web technologies; (7) personal computer and information security; and (8) career exploration, job search strategies and portfolio development. Students are required to complete a series of laboratory assignments that illustrate skills and use technologies in the areas listed including a cross-applications/technologies project. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-128. Computer Science I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
In this introductory course, students obtain fundamental computer science knowledge and develop programming skills using an object-oriented approach, incorporating security awareness, human-computer interactions and social responsibility. This course provides students with a basic foundation in computing history, computing careers, computer organization, operating system responsibilities, software development process, algorithm design and analysis, programming paradigms, and human interaction design.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

CMP-129. Computer Science II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is the second in a three-course sequence that provides students with a foundation in Computer Science. Students develop intermediate-level programming skills using an object-oriented approach with an emphasis on software development, fundamental algorithms and data structures, software assurance, and ethical conduct.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-150. Game Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course covers fundamental game programming techniques using an industry-standard scripting language. Students learn how to use a popular game engine to build game programs. Topics include sprites, animation, collisions, timers, game state variables, player input, audio, user interface design and storyboarding. Laboratory work includes several game element programming exercises, leading up to a final game project.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.
CMP-160. Digital Forensics I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces the student to the fundamental concepts of computer forensics. By conducting a detailed examination of data media for structure, file system type, volumes, lost and hidden areas, the student will develop the ability to collect and analyze computer data for digital evidence. An understanding of specific resources and an exploration of software tools available for data recovery and forensic analysis will be conducted in a laboratory setting. Upon completion of this course the student will demonstrate various data recovery techniques as the basis for forensic evaluation.

Additional Fees: Course fee applies.

CMP-170. Mobile App Design. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to the design and development of mobile applications. Students will learn how to install and use a leading mobile app software development kit, design the user interfaces using different design patterns, create and edit app resources, and design and develop native source code. Students will strengthen their programming skills in user input, variables, operations, decision control structures, methods, lists and arrays. Audio, images, animation and other application controls will be incorporated into apps. Other topics include testing, deployment and publishing apps.

Prerequisites: CMP-128
Additional Fees: Course fee applies.

CMP-200. Computer Operating Systems and Utilities. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is an introductory course in personal computer operating systems. Topics include the features and characteristics of operating system software; installation and configuration including customization, file organization and management; memory and storage management; control of peripheral devices; troubleshooting; networking wizards; and the use of utilities to monitor system performance, backup data and optimize disks. Laboratory assignments provide hands-on opportunities for students to apply the information related in lectures.

Additional Fees: Course fee applies.

CMP-203. Computer Software Applications (ms Office). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This general education course is designed to provide familiarity with contemporary software for word processing, electronic spreadsheets and database applications in a personal computer environment. An introduction to web browser software, electronic slide production and information management is also included. Students are required to complete a series of laboratory assignments that illustrate skill in using the above software applications including a cross-application project. Students must allocate time to complete assignments using current versions of the software (available on campus). Computer Information Systems majors must have department approval to take this course. Students will not receive credit toward graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.

Prerequisites: ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-205. Database Programming (MS Access). 3 Credits.
LECT 3 hrs., LAB 1 hr.
It is recommended that students take CMP-207 Electronic Spreadsheets before taking CMP-205. This course is designed to develop skill in the use of a leading database management system. Topics include the design and maintenance of relational databases and their objects (tables, queries, forms and reports). Also covered is the use of macros to implement procedures. The final portion of the course covers automation techniques by introducing the Visual Basic for Applications programming language and the use of this code to create a user-friendly interface.

Additional Fees: Course fee applies.

CMP-207. Electronic Spreadsheets (MS Excel). 3 Credits.
LECT 3 hrs., LAB 1 hr.
It is recommended that students take CMP-207 Electronic Spreadsheets before taking CMP-205. This is a course in problem solving using a popular spreadsheet program. Emphasis is on construction of elementary to moderately complex worksheets; charting worksheet data, database definitions and reporting; and using VBA (Visual Basic for Applications) to construct simple macros.

Additional Fees: Course fee applies.

CMP-209. Introduction to UNIX. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course combines lecture with hands-on training in the UNIX Operating System. Upon successful completion of this course, students are proficient in using the UNIX Operating System commands and utilities. Topics include purpose and functions of an operating system, hierarchical file system, the shell, vi editor, file security, process management, sorting, networking theory and communications, redirection, piping, and an introduction to shell scripts.

Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-217. Cooperative Work Experience-Information Technologies. 3 Credits.
COOP 3 hrs.
This course provides students in the Department of Information Technologies programs with job training and practical experience in a work environment prior to permanent career employment. This course may be taken in fulfillment of the Computer Information Systems elective. Interested students should consult with the department chair. Computer Information Systems majors only

Prerequisites: Permission of department chair

CMP-218. Cooperative Work Experience Information Technologies - Related Class. 1 Credit.
LECT 1 hr.
A supplement to the Department of Information Technologies Cooperative Work Experience, this course provides a variety of exercises that further develop the students' technical and communication skills, occupational adjustment, and career planning. This course is offered online. Computer Information Systems majors only.

Prerequisites: Permission of department chair
Corequisites: CMP-217.
CMP-230. Computer Architecture and Assembly Language. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is an introduction to computer architecture and assembly language programming. Topics covered include digital logic and data representation, computer architecture and organization, interfacing and input/output strategies, memory architecture, functional organization, and multiprocessing. Students are exposed to basic assembly language programming techniques in laboratory assignments.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-233. Data Structures and Algorithms. 3 Credits.
LECT 3 hrs., LAB 1 hr.
The course includes advanced computer science topics dealing with logical structures of data and the design and analysis of computer algorithms operating on these structures. The course concentrates on data structures such as linked lists, trees, queues, stacks, hash tables and graphs. Algorithms covered include stacks, queues, hash tables, trees, graphs, heaps, sorting and searching. Both iterative and recursive algorithms are explored with analysis of their efficiency. Problems and computer exercises implementing the above structures and techniques are assigned.
Prerequisites: CMP-129 or equivalent and MAT-123 or higher
Additional Fees: Course fee applies.

CMP-235. Advanced UNIX. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is a continuation course in UNIX programming with emphasis on building upon the previously developed skills. Topics include an in-depth coverage of shell scripts, system administration, GUIs, differences and similarities between shells, higher-level programming languages in the UNIX environment, the Internet, sorting, and other advanced topics.
Prerequisites: CMP-209
Additional Fees: Course fee applies.

CMP-237. Visual Basic (VB.Net). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is a fundamental course in object-oriented programming in a Windows environment. Topics include form design, managing controls, handling variables and constants, using decision and loop structures to construct efficient code, handling built-in functions, and simple debugging techniques for detecting errors. Basic fundamentals of classes are introduced.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-239. The Internet and Web Page Design. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is an in-depth study of the Internet and its various services that allows students to appreciate the impact of the Internet in society. Students create World Wide Web home pages using strict Hypertext Markup Language, Cascading Style Sheets (CSS) and XHTML. Other current specifications also are discussed.
Additional Fees: Course fee applies.

CMP-241. Database Programming (Oracle). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course uses the rules and syntax of an industrial-strength database programming language that can be used on all types of computers. Topics include relational database aspects, data input and validation, creation and maintenance of files, query, user control center, and application generator. Emphasis is on development of programs related to business database applications.
Prerequisites: CMP-113 or equivalent or permission of department chair
Additional Fees: Course fee applies.

CMP-243. Ethical Hacking and Systems Defense. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course combines an ethical methodology with the hands-on application of security tools to better help students secure and defend their systems. Students are introduced to common countermeasures that effectively reduce and/or mitigate attacks. This class is designed to help students prepare for professional careers in the information security field and the Certified Ethical Hacker (CEH) certification exam.
Prerequisites: CMP-124
Additional Fees: Course fee applies.

CMP-244. Web Design II. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is a continuation of The Internet and Web Page Design with an emphasis on more advanced concepts and techniques. Topics include Cascading Style Sheets, forms, JavaScript and other current scripting languages. Students learn to work with hosting and web server technology. For their final project, students build a website using these techniques.
Prerequisites: CMP-239
Additional Fees: Course fee applies.

CMP-245. Web Design Tools. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Students learn the leading web design and development tools including the Adobe Creative Suite. Instruction and practice in the suite provides seamless integration and a unified user interface across all tools to streamline multimedia and web development. Through hands-on practice, activities and relevant project application, students develop competence in the use of industry-leading development tools.
Prerequisites: CMP-108 or CMP-128 or CMP-239 or MED-110 or GRD-111
Additional Fees: Course fee applies.

CMP-246. Operating Systems. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to operating systems and their uses and design concerns. Covered are the roles and responsibilities of operating systems including scheduling, concurrency and process synchronization, memory management, file organization and management, and control of peripheral devices. Security and protection topics are also addressed. Laboratory assignments provide interactive learning experiences which demonstrate operating system concepts using programming, operating system commands and scripting.
Prerequisites: CMP-129
Additional Fees: Course fee applies.
CMP-249. Advanced Web Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in Web Development introduces the student to creating interactive and dynamic Web sites using current Web programming. Building on concepts and principles of computer programming and scripting languages, students will interact with Web server technologies and develop front end, advanced professional Web sites with fully functional back end support.
Prerequisites: CMP-128 and CMP-244
Additional Fees: Course fee applies.

CMP-250. Game Production. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Working in teams, students combine their game design and programming skills to explore the practical challenges of managing the development of games. Industry-standard software and advanced programming are used in this capstone course to develop a functioning game of the highest professional quality. Emphasis is placed on the game design document, storyboarding, the game production process, user interface and game design, interactive storytelling, character development, 3D animation, special effects, audio, the collaborative process, and usability testing.
Prerequisites: CMP-150 or MED-220
Additional Fees: Course fee applies.

CMP-261. Digital Forensics II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in digital forensics will enable the student to understand advanced file system forensics, the theory of forensic procedures, review of identification, imaging, and authentication, review of FAT file system, NTFS and EXT3 file systems, partitioning, Window's logical analysis, email analysis, and web history analysis conducted in a laboratory setting. Upon completion of this course the student will apply investigative methodology as it applies to data artifacts, including where they are found in computer operating systems, and how they are deployed in digital forensics. The student will perform forensic media acquisition and verification.
Prerequisites: CMP-160
Additional Fees: Course fee applies.

CMP-290. Independent Study in Information Technology. 3 Credits.
LECT 3 hrs.
Students, in consultation with the department chair, undertake an in-depth analysis of a selected topic, problem or issue related to information technology or pursue additional computer-related work experience. Students are responsible for developing a statement of goals and strategies, maintaining a weekly log, and preparing a written and oral summary report. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-291. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course(s) is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-292. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course(s) is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-293. Special Topics in Information Technology II. 1 Credit.
LECT 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
## Computer Science

### Associate in Science Degree

The Associate in Science degree in Computer Science prepares students for transfer to a bachelor’s-level degree program in Computer Science. Degree requirements are based on national standards. Core Computer Science knowledge and skills are acquired in the following courses: Computer Science I, II and III (Data Structures and Algorithms), Operating Systems, Computer Assembly Language, and Systems Analysis and Design.

Today most career opportunities in Computer Science require a minimum of a bachelor’s degree. This is due to not only increased competition for IT jobs on a worldwide basis but also because the demands of an IT position require a solid foundation in several and varied areas of computing, a broad range that simply cannot be completed in two years. The United States Department of Labor estimates that the job growth for computer-related fields is much higher than the average growth rate – a promising outlook for Computer Science students. It projects the job growth rate to be 20 percent from 2008 through 2018. The New Jersey Department of Labor predicts that 6,000 new jobs will be added to the technology sector during this time period. Some examples of positions available to B.S. Computer Science degree graduates include programmer, database manager, game developer, web developer, mobile applications developer, systems engineer, software engineer and systems analyst.

There are numerous opportunities to transfer to a four-year institution and study Computer Science. The following public and private New Jersey colleges and universities offer a bachelor’s-level Computer Science degree: The College of New Jersey, Kean University, Montclair State University, New Jersey City University, Ramapo College, Richard Stockton State College, Rowan University, Thomas Edison State College, William Paterson University, New Jersey Institute of Technology, Rutgers University, Drew University, Fairleigh Dickinson University, Monmouth University, Princeton University, College of Saint Elizabeth, Saint Peter’s College, Seton Hall University and Stevens Institute of Technology.

For more information, visit the Department of Information Technologies (http://www.ccm.edu/academics/divdep/BMET/infotech) website.

### Degrees

#### AS Computer Science

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1 Students should consult their academic advisors when selecting these courses.

### Faculty

**Nancy Binowski**  
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Courses

CMP-101. Computer Information Literacy. 1 Credit.
LECT 1 hr., LAB 1.5 hr.
This general education course provides students with an introduction to basic computer concepts that include learning the fundamentals of Windows, accessing the World Wide Web and using Microsoft Word. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-104. Internet Literacy. 3 Credits.
LECT 3 hrs.
This general education course provides an in-depth study of the Internet and the knowledge necessary to be a contributing user of the World Wide Web. Topics covered include ISPs, browsers, search engines, netiquette, email, newsgroups, streaming media, file types, and societal issues and trends. This course is offered online. Not for Computer Information Systems majors.
Additional Fees: Course fee applies.

CMP-108. Game Design Concepts. 3 Credits.
LECT 3 hrs.
This course provides the student with an introduction to fundamental game design concepts. The range of topics includes game worlds and settings, character creation, storytelling, game audio, game art and animation, gameplay and user interface design. In addition, the history of the game industry, social impact and the future of gaming are discussed. Students analyze various games and genres and create their own game design document.
Additional Fees: Course fee applies.

CMP-110. Introduction to Data Processing. 3 Credits.
LECT 3 hrs.
Topics in this general education course include computer hardware and software concepts, application and systems software, the Internet and World Wide Web, data communications, and the social impact of computers. Problem solving using software application packages will be implemented. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Additional Fees: Course fee applies.

CMP-120. Foundations of Information Security. 3 Credits.
LECT 3 hrs.
This course provides a principled introduction to the field of information security. History, characteristics and models of information and computer security are explored. Topics such as risk management, logical and physical security, continuity, cryptography, and architecture are discussed. The CISSP knowledge domains are incorporated into the course content affording the student reinforcement and mastery of information security terminology and concepts.
Additional Fees: Course fee applies.

CMP-123. Systems Analysis and Design. 3 Credits.
LECT 3 hrs.
Techniques of object-oriented and structured systems analysis and design are examined in the context of the software development life cycle. Topics include project management, Unified Modeling Language (UML) diagrams, data flow diagrams, system flow charts, application and user-interface design. Class projects provide students with practice in using CASE tools in the analysis and design of application systems. Students participate in a semester-long team project to design an application.
Prerequisites: CMP-128 and one of the following: CMP-129, CMP-150, CMP-237, CMP-239
Additional Fees: Course fee applies.

CMP-124. Network Security. 3 Credits.
LECT 3 hrs.
This course provides an in-depth study of network attack techniques and methods to defend against them. Areas of study include communication security, infrastructure security, cryptography, and operational and organizational security as it relates to network hardware, software and data. Topics include authentication, attacks, virtual private networks, email protection, web security, wireless, firewalls, intrusion detection, cryptography, disaster recovery and computer forensics regarding networked systems. Using a hands-on approach, powerful tools to diagnose and correct security breaches are investigated and manipulated. This course is mapped to a vendor-neutral certification exam.
Additional Fees: Course fee applies.

CMP-125. Information Security Management. 3 Credits.
LECT 3 hrs.
This course entails identifying an organization's information assets and the development, documentation and implementation of policies, standards, procedures and guidelines that ensure confidentiality, integrity and availability of those assets. This course prepares students to understand the planning, organization and roles of individuals involved in security, to develop security policies, and to utilize management tools to identify threats, classify assets and rate vulnerabilities. A detailed, real-world security plan is developed using customized strategies with an in-depth study of PKI (Public Key Infrastructure).
Additional Fees: Course fee applies.
CMP-126. Computer Technology and Applications. 4 Credits.
LECT 3 hrs., LAB 2 hrs.
This general education course teaches: (1) basic computer-use concepts such as hardware and peripherals, file organization and management, and operating system use; (2) Internet use, browsers and search engines; (3) software applications including word processing, spreadsheet, electronic slideshow presentations, database use and calendaring; (4) netiquette, ethics and copyright policies; (5) downloading and installing software and plug-ins; (6) communications technologies including email, blogs and Web technologies; (7) personal computer and information security; and (8) career exploration, job search strategies and portfolio development. Students are required to complete a series of laboratory assignments that illustrate skills and use technologies in the areas listed including a cross-applications/technologies project. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-128. Computer Science I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
In this introductory course, students obtain fundamental computer science knowledge and develop programming skills using an object-oriented approach, incorporating security awareness, human-computer interactions and social responsibility. This course provides students with a basic foundation in computing history, computing careers, computer organization, operating system responsibilities, software development process, algorithm design and analysis, programming paradigms, and human interaction design.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

CMP-129. Computer Science II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is the second in a three-course sequence that provides students with a foundation in Computer Science. Students develop intermediate-level programming skills using an object-oriented approach with an emphasis on software development, fundamental algorithms and data structures, software assurance, and ethical conduct.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-150. Game Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course covers fundamental game programming techniques using an industry-standard scripting language. Students learn how to use a popular game engine to build game programs. Topics include sprites, animation, collisions, timers, game state variables, player input, audio, user interface design and storyboarding. Laboratory work includes several game element programming exercises, leading up to a final game project.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-160. Digital Forensics I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces the student to the fundamental concepts of computer forensics. By conducting a detailed examination of data media for structure, file system type, volumes, lost and hidden areas, the student will develop the ability to collect and analyze computer data for digital evidence. An understanding of specific resources and an exploration of software tools available for data recovery and forensic analysis will be conducted in a laboratory setting. Upon completion of this course, the student will demonstrate various data recovery techniques as the basis for forensic evaluation.
Additional Fees: Course fee applies.

CMP-170. Mobile App Design. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to the design and development of mobile applications. Students will learn how to install and use a leading mobile app software development kit, design the user interfaces using different design patterns, create and edit app resources, and design and develop native source code. Students will strengthen their programming skills in user input, variables, operations, decision control structures, methods, lists and arrays. Audio, images, animation and other application controls will be incorporated into apps. Other topics include testing, deployment and publishing apps.
Prerequisites: CMP-128
Additional Fees: Course fee applies.

CMP-200. Computer Operating Systems and Utilities. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is an introductory course in personal computer operating systems. Topics include the features and characteristics of operating system software; installation and configuration including customization, file organization and management; memory and storage management; control of peripheral devices; troubleshooting; networking wizards; and the use of utilities to monitor system performance, backup data and optimize disks. Laboratory assignments provide hands-on opportunities for students to apply the information related in lectures.
Additional Fees: Course fee applies.

CMP-203. Computer Software Applications (ms Office). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This general education course is designed to provide familiarity with contemporary software for word processing, electronic spreadsheets and database applications in a personal computer environment. An introduction to web browser software, electronic slide production and information management is also included. Students are required to complete a series of laboratory assignments that illustrate skill in using the above software applications including a cross-application project. Students must allocate time to complete assignments using current versions of the software (available on campus). Computer Information Systems majors must have department approval to take this course. Students will not receive credit toward graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.
CMP-205. Database Programming (MS Access). 3 Credits.
LECT 3 hrs., LAB 1 hr.
It is recommended that students take CMP-207 Electronic
Spreadsheets before taking CMP-205. This course is designed to
develop skill in the use of a leading database management system.
Topics include the design and maintenance of relational databases
and their objects (tables, queries, forms and reports). Also covered
is the use of macros to implement procedures. The final portion of
the course covers automation techniques by introducing the Visual
Basic for Applications programming language and the use of this
code to create a user-friendly interface.
Additional Fees: Course fee applies.

CMP-207. Electronic Spreadsheets (MS Excel). 3 Credits.
LECT 3 hrs., LAB 1 hr.
It is recommended that students take CMP-207 Electronic
Spreadsheets before taking CMP-205. This is a course in problem
solving using a popular spreadsheet program. Emphasis is on
construction of elementary to moderately complex worksheets;
charting worksheet data, database definitions and reporting; and
using VBA (Visual Basic for Applications) to construct simple
macros.
Additional Fees: Course fee applies.

CMP-209. Introduction to UNIX. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course combines lecture with hands-on training in the UNIX
Operating System. Upon successful completion of this course,
students are proficient in using the UNIX Operating System
commands and utilities. Topics include purpose and functions of
an operating system, hierarchical file system, the shell, vi editor,
file security, process management, sorting, networking theory and
communications, redirection, piping, and an introduction to shell
scripts.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-217. Cooperative Work Experience-Information
Technologies. 3 Credits.
COOP 3 hrs.
This course provides students in the Department of Information
Technologies programs with job training and practical experience
in a work environment prior to permanent career employment. This
course may be taken in fulfillment of the Computer Information
Systems elective. Interested students should consult with the
department chair. Computer Information Systems majors only
Prerequisites: Permission of department chair

CMP-218. Cooperative Work Experience Information
Technologies - Related Class. 1 Credit.
LECT 1 hr.
A supplement to the Department of Information Technologies
Cooperative Work Experience, this course provides a variety
of exercises that further develop the students' technical and
communication skills, occupational adjustment, and career planning.
This course is offered online. Computer Information Systems majors
only.
Prerequisites: Permission of department chair
Corequisites: CMP-217.

CMP-230. Computer Architecture and Assembly Language. 3
Credits.
LECT 3 hrs., LAB 1 hr.
This course is an introduction to computer architecture and
assembly language programming. Topics covered include
digital logic and data representation, computer architecture and
organization, interfacing and input/output strategies, memory
architecture, functional organization, and multiprocessing. Students
are exposed to basic assembly language programming techniques
in laboratory assignments.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-233. Data Structures and Algorithms. 3 Credits.
LECT 3 hrs., LAB 1 hr.
The course includes advanced computer science topics dealing with
logical structures of data and the design and analysis of computer
algorithms operating on these structures. The course concentrates
on data structures such as linked lists, trees, queues, stacks, hash
tables and graphs. Algorithms covered include stacks, queues,
hash tables, trees, graphs, heaps, sorting and searching. Both
iterative and recursive algorithms are explored with analysis of their
efficiency. Problems and computer exercises implementing the
above structures and techniques are assigned.
Prerequisites: CMP-129 or equivalent and MAT-123 or higher
Additional Fees: Course fee applies.

CMP-235. Advanced UNIX. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is a continuation course in UNIX programming with emphasis
on building upon the previously developed skills. Topics include
an in-depth coverage of shell scripts, system administration,
GUIs, differences and similarities between shells, higher-level
programming languages in the UNIX environment, the Internet,
sorting, and other advanced topics.
Prerequisites: CMP-209
Additional Fees: Course fee applies.

CMP-237. Visual Basic (VB.Net). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is a fundamental course in object-oriented programming in
a Windows environment. Topics include form design, managing
controls, handling variables and constants, using decision and loop
structures to construct efficient code, handling built-in functions,
and simple debugging techniques for detecting errors. Basic
fundamentals of classes are introduced.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-239. The Internet and Web Page Design. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is an in-depth study of the Internet and its various
services that allows students to appreciate the impact of the Internet
in society. Students create World Wide Web home pages using strict
Hypertext Markup Language, Cascading Style Sheets (CSS) and
XHTML. Other current specifications also are discussed.
Additional Fees: Course fee applies.
CMP-241. Database Programming (Oracle). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course uses the rules and syntax of an industrial-strength database programming language that can be used on all types of computers. Topics include relational database aspects, data input and validation, creation and maintenance of files, query, user control center, and application generator. Emphasis is on development of programs related to business database applications.
Prerequisites: CMP-113 or equivalent or permission of department chair
Additional Fees: Course fee applies.

CMP-243. Ethical Hacking and Systems Defense. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course combines an ethical methodology with the hands-on application of security tools to better help students secure and defend their systems. Students are introduced to common countermeasures that effectively reduce and/or mitigate attacks. This class is designed to help students prepare for professional careers in the information security field and the Certified Ethical Hacker (CEH) certification exam.
Prerequisites: CMP-124
Additional Fees: Course fee applies.

CMP-244. Web Design II. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is a continuation of The Internet and Web Page Design with an emphasis on more advanced concepts and techniques. Topics include Cascading Style Sheets, forms, JavaScript and other current scripting languages. Students learn to work with hosting and web server technology. For their final project, students build a website using these techniques.
Prerequisites: CMP-239
Additional Fees: Course fee applies.

CMP-245. Web Design Tools. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Students learn the leading web design and development tools including the Adobe Creative Suite. Instruction and practice in the suite provides seamless integration and a unified user interface across all tools to streamline multimedia and web development. Through hands-on practice, activities and relevant project application, students develop competence in the use of industry-leading development tools.
Prerequisites: CMP-108 or CMP-128 or CMP-239 or MED-110 or GRD-111
Additional Fees: Course fee applies.

CMP-246. Operating Systems. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to operating systems and their uses and design concerns. Covered are the roles and responsibilities of operating systems including scheduling, concurrency and process synchronization, memory management, file organization and management, and control of peripheral devices. Security and protection topics are also addressed. Laboratory assignments provide interactive learning experiences which demonstrate operating system concepts using programming, operating system commands and scripting.
Prerequisites: CMP-129
Additional Fees: Course fee applies.

CMP-249. Advanced Web Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in Web Development introduces the student to creating interactive and dynamic Web sites using current Web programming. Building on concepts and principles of computer programming and scripting languages, students will interact with Web server technologies and develop front end, advanced professional Web sites with fully functional back end support.
Prerequisites: CMP-128 and CMP-244
Additional Fees: Course fee applies.

CMP-250. Game Production. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Working in teams, students combine their game design and programming skills to explore the practical challenges of managing the development of games. Industry-standard software and advanced programming are used in this capstone course to develop a functioning game of the highest professional quality. Emphasis is placed on the game design document, storyboarding, the game production process, user interface and game design, interactive storytelling, character development, 3D animation, special effects, audio, the collaborative process, and usability testing.
Prerequisites: CMP-150 or MED-220
Additional Fees: Course fee applies.

CMP-261. Digital Forensics II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in digital forensics will enable the student to understand advanced file system forensics, the theory of forensic procedures, review of identification, imaging, and authentication, review of FAT file system, NTFS and EXT3 file systems, partitioning, Windows's logical analysis, email analysis, and web history analysis conducted in a laboratory setting. Upon completion of this course the student will apply investigative methodology as it applies to data artifacts, including where they are found in computer operating systems, and how they are deployed in digital forensics. The student will perform forensic media acquisition and verification.
Prerequisites: CMP-160
Additional Fees: Course fee applies.

CMP-290. Independent Study in Information Technology. 3 Credits.
LECT 3 hrs.
Students, in consultation with the department chair, undertake an in-depth analysis of a selected topic, problem or issue related to information technology or pursue additional computer-related work experience. Students are responsible for developing a statement of goals and strategies, maintaining a weekly log, and preparing a written and oral summary report. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-291. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
CMP-292. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information
technologies. Topics may differ each time the course(s) is offered.
Students should consult the department chair for additional
information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-293. Special Topics in Information Technology II. 1 Credit.
LECT 1 hr.
An examination of selected topics or issues in information
technologies. Topics may differ each time the course is offered.
Students should consult the department chair for additional
information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

SCI-101. Natural Science. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Timely topics for discussion and analysis are selected from the
general areas of physics, chemistry, meteorology and astronomy.
Emphasis is conceptual rather than mathematical.
Additional Fees: Course fee applies.

SCI-106. Introduction to Astronomy. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is a non-mathematical treatment of the basic concepts
of astronomy leading to discussions of some of the exciting
astronomy-related questions of current interest. Topics include
cosmology, stellar evolution, planetary characteristics and recent
developments in space exploration. Planetarium demonstrations
are incorporated. Students needing a 4 credit Laboratory Science
course should take SCI-118.
Additional Fees: Course fee applies.

SCI-118. General Astronomy. 4 Credits.
LECT 3 hrs., LAB 2 hrs.
This course is a scientific exploration of the human place in the
universe. Studied are the origin and history of the Universe and the
formation of the Earth and solar system. The Earth's properties are
compared with those of the other planets. Also covered are exciting
contemporary topics such as global warming, black holes and
dark matter. Although largely descriptive, the course occasionally
requires the use of algebra and geometry-level mathematics.
Prerequisites: MAT-016 or equivalent
Additional Fees: Course fee applies.
Criminal Justice

Associate in Science Degree

This curriculum of study is designed for students seeking further education in criminal justice, as well as those needing career-oriented skills and knowledge. The ability of police, judicial and correctional agencies to control and respond to crime is inherently related to the human interaction skills of those who staff the system. This curriculum provides coursework to guide the student in understanding the complex issues related to the role of law.

For more information, visit the Criminal Justice (http://www.ccm.edu/academics/degrees/criminaljustice.aspx) website.

Degrees

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  - AS Criminal Justice Track 2 - Homeland Security (p. 52)
  - AS Criminal Justice Track 3 - Juvenile Issues (p. 52)
  - A (p. 52)S Criminal Justice Track 4 - Criminal Investigations (p. 52)
  - AS Criminal Justice Track 5 - Arson (p. 52)
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  - AS Criminal Justice Track 7 - Computer Forensics (p. 53)

AS Criminal Justice

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<td>CJS-221 Criminal Law and Procedure</td>
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<td>SOC-222 Deviant Behavior</td>
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<td>HIS-203 History of Minorities in U.S.</td>
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Law

Along with the Course List in the AS Criminal Justice program, students interested in this track choose the following courses.

- POL-270 Civil Liberties-Basic Rights and Freedom 3
- or POL-222 Constitutional Law 3
- CJS-120 Jurisprudence: The Philosophy of Law 3
- POL-111 American Government 3

Homeland Security

Along with the Course List in the AS Criminal Justice program, students interested in this track choose the following courses.

- CJS-126 Introduction to Emergency Management 3
- CJS-127 Introduction to Homeland Security 3
- CJS-231 Domestic and International Terrorism 3

Juvenile Issues

Along with the Course List in the AS Criminal Justice program, students interested in this track choose the following courses.

- CJS-214 Juvenile Delinquency 3
- PSY-214 Adolescent Psychology 3
- CJS-215 Investigative Function 3

Criminal Investigations

Along with the Course List in the AS Criminal Justice program, students interested in this track choose the following courses.

- CJS-214 Juvenile Delinquency 3
- CJS-215 Investigative Function 3
- PHO-115 Photography I 3

Arson

Along with the Course List in the AS Criminal Justice program, students interested in this track choose the following courses.

- FST-204 Fire Protection, Building Construction 3
- FST-205 Fire Investigation 3
- CJS-215 Investigative Function 3

Corrections

Along with the Course List in the AS Criminal Justice program, students interested in this track choose the following courses.

- CJS-131 Introduction to Corrections 3
- POL-270 Civil Liberties-Basic Rights and Freedom 3
- CJS-225 Probation and Parole 3
**Computer Forensics**
Along with the Course List in the AS Criminal Justice program, students interested in this track choose the following courses.

<table>
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<tr>
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<td>CJS-215</td>
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<td>CMP-125</td>
<td>Information Security Management Security</td>
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</table>

**Faculty**

Dr. William Solomons  
Assistant Chairperson, Assistant Professor, Criminal Justice  
Ph.D., Capella University  
M.A., Seton Hall University  
B.A., CUNY John Jay College of Criminal Justice  
SH 203 973-328-5648 wsolomons@ccm.edu

John Hurd  
Assistant Professor, Criminal Justice  
M.A., Centenary College  
B.A., Thomas Edison State College  
A.S., County College of Morris  
SH 203 973-328-5633 jhurd@ccm.edu

Nicholas Irons  
Professor, Criminal Justice  
M.A., Fairleigh Dickinson University  
B.S., William Paterson University  
SH 203 973-328-5634 niron@ccm.edu

**Courses**

**CJS-115. Introduction to Security. 3 Credits.**  
LECT 3 hrs.  
The historical, philosophical and legal basis of security. The role of security and the security individual in modern society; the concept of professionalism; and the survey of the administrative, personnel and physical aspects of the security field.

**CJS-116. Introduction to Criminology. 3 Credits.**  
LECT 3 hrs.  
The study of crime, crime statistics, theories of crime causation, crime typologies, the impact of crime, limits of criminal law, and society's reactions to criminal behavior.

**CJS-120. Jurisprudence: The Philosophy of Law. 3 Credits.**  
LECT 3 hrs.  
Explores the principles upon which law is based. The course seeks to define, categorize and relate those principles to each other and ascertain not what the law is, but rather why it is, and its capacities and limits.

**CJS-121. Criminal Justice System. 3 Credits.**  
LECT 3 hrs.  
A study of the overall system of criminal justice from its early historical development to its evolution within the United States. Identification of various sub-enforcement, courts and corrections; their role expectations and systems and components - law interrelationships; and basic premises of crime, punishment and rehabilitation.

**CJS-122. Classics of Criminology. 3 Credits.**  
LECT 3 hrs.  
The goal of this course is to gain an intellectual understanding of criminology by reviewing its progress in the past 20 years. It presents the causes of crime and the effect of crime on society, victims and criminals. A review of the literature is accomplished by investigating sociological, psychological and biological theories of crime.

**CJS-126. Introduction to Emergency Management. 3 Credits.**  
LECT 3 hrs.  
This course examines the necessity for Emergency Management. It covers the evolution of Emergency Management in the United States. The course covers an introduction to Disaster Preparedness, Response and Recovery. Employment in the Emergency Management Field is also discussed. The course also examines types of disasters that may be experienced.

**CJS-127. Introduction to Homeland Security. 3 Credits.**  
LECT 3 hrs.  
This course examines the necessity for Homeland Security. It covers the development of the Department of Homeland Security (DHS) including its organization and function. The course covers an introduction to Disaster Preparedness, Response and Recover. This course also gives a brief overview of International and Domestic Terrorism, and examines the future of Homeland Security.

**CJS-131. Introduction to Corrections. 3 Credits.**  
LECT 3 hrs.  
An introduction and overview of fundamental process, trends and practices of probation, institutional treatment, parole and contemporary community-based correctional programs. Included is a review of the history and philosophy of corrections, with emphasis on the constitutional rights of offenders.

**CJS-213. Police and the Community. 3 Credits.**  
LECT 3 hrs.  
This course focuses on the importance of and strategies for positive police-community interactions and addresses the internal and external communities the police serve. The interdisciplinary approach of the course draws data and discussions from a wide range of disciplines and gives students a well-rounded perspective to help them better recognize the importance of, appreciate, and practice positive police-community relations.  
**Prerequisites:** CJS-121.

**CJS-214. Juvenile Delinquency. 3 Credits.**  
LECT 3 hrs.  
A review of the historical reasons for the establishment of juvenile courts in the United States, an examination of the juvenile justice process, and an introduction to the functions of the various components of the system. Sociological concepts and theory of the adolescent subculture are explored. Delinquency prevention aspects, as well as treatment methodologies, are included.

**CJS-215. Investigative Function. 3 Credits.**  
LECT 3 hrs.  
Fundamentals of reconstructing a chronological sequence of events as to if, when and how a crime was committed. This includes searching, collecting, preserving, evaluating and cross-comparing physical and oral evidence within the framework of accepted procedural and constitutional laws. Procedures using proven scientific methods and analysis to meet the ideal standards of an investigation to resolve the issue, identify the offenders and professionally present the findings in court are included.
CJS-221. Criminal Law and Procedure. 3 Credits.
LECT 3 hrs.
This course consists of a fundamental overview of the historical development and philosophy of law including definitions, classifications, and Constitutional origins. Additional topics are case law, methodology, and the concept of law as a social force; a study of the rules of evidence with emphasis upon the nature of evidence, burden of proof, confessions, admissions and witnesses, as well as a consideration of judicial procedures and the application of legal concepts to the justice process.
Prerequisites: CJS-121.

CJS-222. Concepts of Criminal Law. 3 Credits.
LECT 3 hrs.
Historical development and philosophy of law including definitions, classifications and Constitutional origins. Also covered are case law, methodology and the concept of law as a social force.

CJS-223. Criminal Evidence and Procedure. 3 Credits.
LECT 3 hrs.
A study of the rules of evidence with emphasis upon the nature of evidence, burden of proof, confessions, admissions and witnesses. Included are a consideration of judicial procedures and the application of legal concepts to the justice process.

CJS-224. Introduction to Police Operations. 3 Credits.
LECT 3 hrs.
This course provides the student with an opportunity to observe and interact with the fundamentals of police operations. The student is provided with a basis for resolving everyday operational dilemmas from a proactive and reactive perspective. The course emphasizes the need for officers to think critically and be creative as they interact with citizens in their communities.
Prerequisites: CJS-121.

CJS-225. Probation and Parole. 3 Credits.
LECT 3 hrs.
This course examines the history of the fields of probation and parole, detailing how it moved from a focus on treatment/rehabilitation and the indeterminate sentence, toward a model based on control/law enforcement and the determinate sentence. The course will discuss how the historical changes affected the roles and responsibilities of probation and parole officers. Additional, students will explore the use of cognitive behavior therapy and motivation interviewing, "broken windows"/community-based supervision, and the importance of evidence-based practice.
Prerequisites: CJS-121.

CJS-228. Public Safety Internship/Coop. 3 Credits.
LECT 3 hrs.
This course provides students with an opportunity to obtain practical, real world experience in the field of public safety. On-site mentors supervise the student throughout their field experience and department faculty serve as the student's advisors. Criminal Justice or Fire Science majors: permission of the department, 2.0 GPA or better and majority of core requirements completed.
Prerequisites: Permission of department chair.

CJS-231. Domestic and International Terrorism. 3 Credits.
LECT 3 hrs.
This course offers an in-depth examination of both Domestic and International Terrorism. Topics include; the history and definitions of terrorism, the motivation behind terrorism, how terrorists fund and plan their operations. Portions of the course will address preparedness and response to terrorism. The course will conclude with current and future issues of terrorism.
Prerequisites: CJS-121 or CJS-127.

CJS-291. Special Topics in Criminal Justice. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in criminal justice. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Criminal Justice.

CJS-292. Special Topics in Criminal Justice. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in criminal justice. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Criminal Justice.
**Culinary Arts and Science**  
**Associate in Applied Science Degree**

This degree program addresses the need for more diverse opportunities in the field of culinary arts. Students learn how to cook professionally in a production kitchen and also have the opportunity to explore specialized interests such as food styling, food science and other studies of the culinary arts. The program's curriculum is based on a solid foundation of classical and modern American cuisine but also provides students with the opportunity to build their own career interests as they learn how to prepare and serve food in a safe manner.

Transfer opportunities are available for students who wish to complete a more advanced degree in Hospitality Management, Culinary Arts or other related studies.

For more information, visit the Culinary Arts and Science (http://www.ccm.edu/academics/degrees/culinarydegree.aspx) website.

Please visit the Hospitality Management catalog page (http://catalog.ccm.edu/credit/areasofstudy/hospitality) for information on that program.

**Degrees**

**AAS Culinary Arts and Science**  
(P3425)

**General Education Foundation**

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**Specialized Culinary Core**

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<td>HOS-101</td>
<td>Introduction to Food</td>
<td>3</td>
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<tr>
<td>HOS-102</td>
<td>Food Management</td>
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<td>HOS-103</td>
<td>Food Production</td>
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<td>HOS-105</td>
<td>Food Science and Nutrition</td>
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<td>HOS-106</td>
<td>Success in Hospitality</td>
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<td>HOS-117</td>
<td>Introduction to Baking</td>
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<td>HOS-118</td>
<td>Introduction to the Hospitality Industry</td>
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<td>HOS-121</td>
<td>Advanced Baking</td>
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<td>HOS-123</td>
<td>International Cuisines</td>
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<td>HOS-126</td>
<td>American Regional Cuisine</td>
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<td>HOS-127</td>
<td>Italian Cuisine</td>
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<td>HOS-128</td>
<td>Chinese Cuisine</td>
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<td>HOS-210</td>
<td>Dining Room Management</td>
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<td>HOS-211</td>
<td>Human Resource Management in the Hospitality Industry</td>
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**HOS-213**  
Food and Beverage Purchasing and Control  3

**Hospitality Co-op/Internship (Select One of the Following Courses)**  
- HOS-221 Co-op Work Experience (1 Cr)
- HOS-222 Co-op Work Experience (2 crs)
- HOS-223 Cooperative Work Experience- Hotel/Restaurant Management (135-300 Hours)
- HOS-227 Internship Work Experience (45-100 Hrs)
- HOS-228 Internship Work Experience (90-200 Hrs)
- HOS-229 Internship Work Experience (135-300 Hrs)

**HOS-233**  
Food as Art  3

**Specialized Culinary Core Credits**  
42-44

**Total Credits**  
62-65

**Certificates of Achievement**

**Culinary Arts**  
**A Culinary Arts and Science Certificate of Achievement**  
(P0420)

This Certificate of Achievement is designed to fulfill the needs of students working in the hospitality field either as preliminary training to the career or as continuing education within the industry. The coursework provides basic skills and training in the many areas of food safety, production and management.

**Culinary Arts – Certificate and Options**

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<tr>
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<th>Title</th>
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**Culinary Arts**

- HOS-102 Food Management
- HOS-103 Food Production

**Baking Arts**

- HOS-117 Introduction to Baking
- HOS-121 Advanced Baking

**World Cuisines**

- HOS-123 International Cuisines
- HOS-126 American Regional Cuisine
- HOS-127 Italian Cuisine
- HOS-128 Chinese Cuisine

**Culinary Arts – Certificate and Options Credits**  
10

**Total Credits**  
10

**Faculty**

Mark Cosgrove, CHE  
Chairperson, Hospitality Management & Culinary Arts  
Associate Professor, Hospitality Management  
MAL'S, Monmouth University  
B.S., LaSalle College  
A.O.S., Culinary Institute of America  
SCC 241A 973-328-5652 mcosgrove@ccm.edu
Courses

HOS-100. Serv-Safe Food Handling. 1 Credit.
LECT 1 hr.
Students are introduced to the basic principles and guidelines of sanitation and food safety in a professional food service environment. Topics include foodborne illness, microbiology, food allergens and facility sanitation. This course provides the opportunity to receive one NRAEF Certificate (Serv-Safe Food Handling) towards the ManageFirst Certification.

HOS-101. Introduction to Food. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
The modern kitchen offers a multitude of opportunities to explore the world of food. From the equipment available to the bounty of fresh and processed foods that can be obtained and prepared by both the novice and the more experienced cook, this course presents an introduction to the culinary arts. While the topics are basic, the course is also a foundation to more advanced studies in food.

Additional Fees: Course fee applies.

HOS-102. Food Management. 3 Credits.
LECT 3 hrs.
The management of food and related costs in the professional environment is an underlying factor throughout the hospitality industry. This course provides the framework from which to examine any organization and understand the principles by which they operate and manage food production. Included in the course is the opportunity to receive one NRAEF certificate in Principles of Food and Beverage Management towards the ManageFirst Certification.

HOS-103. Food Production. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
The production of food in the professional environment is a demanding and time-consuming process which requires great skill. This course provides the framework from which to examine any organization and understand the principles and processes by which they prepare and manage food production. Included in the course is the opportunity to receive one NRAEF Certificate in Food Production towards the ManageFirst Certification.

Prerequisites: HOS-101 or equivalent
Corequisites: HOS-101 or equivalent
Additional Fees: Course fee applies.

HOS-105. Food Science and Nutrition. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course covers the role of nutrition in food and health and the impact nutrition has on the food service industry. Students learn basic nutrition concepts and discuss current findings and controversies. Topics include foods, labels, recipes and menus for nutritional benefits, and plan diets. In laboratory sessions, students apply their knowledge of nutritional concepts to make healthier food. Included in the course is the opportunity to receive one NRAEF Certificate (Nutrition) towards the ManageFirst Certification.

Prerequisites: HOS-100
Corequisites: HOS-100
Additional Fees: Course fee applies.

HOS-106. Success in Hospitality. 1 Credit.
LECT 1 hr.
This course is designed to offer first-year students in Hospitality a comprehensive approach to success at CCM and in future career endeavors in the Hospitality Industry. An introduction to academic responsibility and personal growth will lead to thoughtful consideration of career goals. The planning, defining and organizing for success will be addressed on an individual basis in relation to the educational and career goals at CCM and in the future.

HOS-111. Conversational Spanish in Hospitality. 1 Credit.
LAB 2 hrs.
Topics covered in this course focus on the importance of building a welcoming work environment and encouraging diversity with a Spanish-speaking employee. The hospitality industry includes hotels, restaurants, banquet halls, hospitals, schools, office buildings, government buildings, cruise ships and operate in both the private and public sectors. The positions found in these establishments range from top-management to entry-level. Many of the positions are filled by Spanish-speaking workers who have the skills to fulfill the job requirements; however, many do not speak English. The industry is recognizing this communication barrier among their employees, and the purpose of this class is to help the student become better acquainted with the Spanish language in the hospitality industry focusing on vocabulary and grammar.

HOS-117. Introduction to Baking. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This is an introductory course in baking. This class introduces the student to the fundamental principles within a bakeshop and pastry kitchen. The student learns the basic baking ingredients and how they are used; weights, measurements, equipment and importance of accuracy; and basic procedure common to bakery formulas. Student create and bake breads, quick breads, muffins and assorted pies.

Additional Fees: Course fee applies.

HOS-118. Introduction to the Hospitality Industry. 3 Credits.
LECT 3 hrs.
A survey course of the hospitality industry which provides students with an overview of the role of management within the profession. Fundamentals of lodging management including luxury, convention, all-suite, gaming and resort hotels, and food service management, including restaurants, catering, and institutional and business food service are studied. In addition, travel and tourism, recreation and leisure management (theme parks, clubs and public parks), meeting and event sales, planning and management, senior living services and support infrastructure, and casino and gaming management, as the balance of the eight areas which comprise the main business segments of the hospitality industry, are studied. Basic concepts of ownership, franchising, management, human resources, marketing, cost control, facilities management, service and career opportunities are examined.
HOS-120. Hotel/Hospitality Management. 3 Credits.
LECT 3 hrs.
This course provides Hospitality Management students and aspiring hotel management professionals within the industry strong conceptual management underpinnings while addressing the unique requirements of lodging managers. Students are taken on a department-by-department tour of a full-service hotel. The organization and operation of lodging properties are analyzed from the perspective of the front office manager. This course combines discussions of hotel departmental managerial responsibilities, roles and practices with information directly relevant to careers in lodging management. Students learn about the procedures effective managers use to ensure their hotels and, thus, their own ultimate success.

HOS-121. Advanced Baking. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is a continuation of the baking methods and formulas presented in Introduction to Baking. Students prepare a variety of cakes and icings and learn to apply a variety of decorating styles and techniques. In addition, students create advanced yeast bread, pies, tarts, mousses and chocolates. Emphasis is also placed on dessert plating and presentation which will be covered during the combined lecture and laboratory classes.
Prerequisites: HOS-117
Additional Fees: Course fee applies.

HOS-123. International Cuisines. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
The study of the world of food and the cuisines of different cultures is one of the growing trends in the United States. Our modern culture brings together a multitude of different possibilities in the kitchen and is a fascinating and wide-ranging study of both practice and theory. This class will prepare menu items from around the world to delight the mind and expand the individuals cooking experience in a production kitchen.
Additional Fees: Course fee applies.

HOS-126. American Regional Cuisine. 1 Credit.
LAB 2 hrs.
American Regional Cuisine celebrates the diversity, distinction and delectable essences of American cooking. Organized by region, these recipes are drawn from every part of the menu, offering a range of complete meals for each culinary style.
Additional Fees: Course fee applies.

HOS-127. Italian Cuisine. 1 Credit.
LAB 2 hrs.
From savory soups to sweet desserts, students study Italian cooking in the same manner as a typical menu. Recipes are drawn from every part of the meal and offer a wide range of culinary styles. The course provides a fascinating introduction to the widely diverse cuisine of Italy.
Additional Fees: Course fee applies.

HOS-128. Chinese Cuisine. 1 Credit.
LAB 2 hrs.
Chinese cooking is one of the world's oldest continuous culinary traditions, developed over the course of 4,000 years. A subject of profound importance for countless generations of Chinese philosophers, scholars, poets and ordinary people, the selection, preparation and consumption of food is much more than a matter of sustenance in Chinese tradition. This course examines several of these factors while preparing and sampling traditional Chinese dishes.
Additional Fees: Course fee applies.

HOS-129. Latin Cuisines. 1 Credit.
LAB 2 hrs.
Latin Cuisines investigates the origins of Iberian, Caribbean, Central and South American cooking and develops the student knowledge of these areas. The many similarities are only a starting point for the incredible diversity that is modern Latin Cuisine. The class will produce full Latin menus based on different periods and areas of the global community.
Additional Fees: Course fee applies.

HOS-201. Marketing and Event Planning. 3 Credits.
LECT 3 hrs.
The field of event planning is one of the most exciting and dynamic aspects of the hospitality industry. In order to be successful, the marketing of not just the business but also the individual is of primary importance. This course offers the opportunity to experience actual event planning while also studying menu, restaurant and personal marketing in relation to the hospitality industry. The course also offers potential certification in one NRAEF ManageFirst certificate in Hospitality and Restaurant Marketing.

HOS-210. Dining Room Management. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Practical training in the operations and practices of a modern dining room. Students will learn the techniques needed to work and succeed as a management professional in the dining environment. The importance of customer service will culminate with the operation of a theoretical restaurant and individual catering experiences as Dining Room staff and management.
Prerequisites: HOS-102
Additional Fees: Course fee applies.

HOS-211. Human Resource Management in the Hospitality Industry. 3 Credits.
LECT 3 hrs.
This course applies human resource management principles to the hotel and restaurant industry. Topics covered include recruitment, training, motivation, job descriptions and alternative personnel policies. The course emphasizes the vital role of the diversity within the industry. Students will consider human resources in the context of a complete operating business. Included in the course is the opportunity to receive one NRAEF Certificate in Human Resources towards the ManageFirst Certification.
HOS-213. Food and Beverage Purchasing and Cost Controls. 3 Credits.
LECT 3 hrs.
A more advanced course dealing with the concepts of selection and procurement in the hospitality industry. Special emphasis is given to food cost, the purchasing function, procurement and inventory controls. In addition, forecasting, budgeting, cash management, and profit and loss statements also are studied. Included in the course is the opportunity to receive two NRAEF certificates (Inventory and Purchasing and Controlling Foodservice Costs) towards the ManageFirst Certification.

HOS-215. Bar and Beverage Service Management. 3 Credits.
LECT 3 hrs.
A comprehensive study of food and beverage managerial principles, with an emphasis on alcoholic beverages. The manufacture, distribution, control procedures, legal aspects, integrity issues and the responsible service of alcoholic beverages are studied. Students gain product knowledge of distilled spirits, wines and beers, including an examination of contemporary non-alcoholic beverage alternatives. The opportunity for two NRAEF certificates is included in the course (Serv-Safe Alcoholic and Bar & Beverage Management).

HOS-221. Cooperative Work Experience Hospitality (45-100 Hours). 1 Credit.
COOP 1 hr.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 45 and 100 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-222. Cooperative Work Experience Hospitality (90-200 Hours). 2 Credits.
COOP 2 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 90 and 200 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-223. Cooperative Work Experience Hospitality (135-300 Hours). 3 Credits.
COOP 3 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 135 and 300 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-224. Cooperative Work Experience Hospitality (135-300 Hours). 3 Credits.
COOP 3 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 135 and 300 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-225. Internship Work Experience Hospitality (45-100 Hrs). 1 Credit.
LECT 1 hr.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 45 and 100 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.

HOS-226. Internship Work Experience Hospitality (90-200 Hours). 2 Credits.
LECT 2 hrs.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 90 and 200 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.

HOS-227. Internship Work Experience Hospitality (135-300 Hours). 3 Credits.
LECT 3 hrs.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 135 and 300 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.
HOS-232. Principles of Travel and Tourism. 3 Credits.
LECT 3 hrs.
Principles of travel and tourism offer Hospitality Management majors, other students, and aspiring travel and tourism professionals a comprehensive overview of the principles, practices and philosophies of this interdisciplinary segment of the hospitality industry. Major concepts, including the economics, history, career opportunities, global perspective, worldwide organizations, modes of travel and related services, providers and destination pursuits, are studied.

HOS-233. Food as Art. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to the art of food styling, food photography, garde manger and cake decoration. Topics covered include how to prepare, arrange, preserve food photo shoot, techniques on how to prepare pâtés, terrines and fresh cheese. This course covers the art and science of cake preparation, assembly and decoration. Students have the opportunity to create a portfolio of work.
Prerequisites: HOS-100, HOS-101, HOS-102
Additional Fees: Course fee applies.

HOS-234. Meeting and Event Sales, Planning, and Management. 3 Credits.
LECT 3 hrs.
Meeting and Event Sales, Planning and Management offers Hospitality Management majors, other students and aspiring professionals in this discipline an in-depth study of generally accepted principles and practices in this segment of the hospitality industry. Career opportunities, corporate meeting planning, catering organization and administration, and other various types of meetings and events are examined.

HOS-239. Independent Study-Hospitality Industry. 3 Credits.
LECT 3 hrs.
This course is an independent work/study designed for the student on a topic that is selected in accordance with academic standards and dependent upon department chair approval.
Prerequisites: Permission of department chair.
Dance - Fine Arts

Associate in Fine Art Degree

The Associate in Fine Arts (AFA) degree focuses on developing an understanding of the specific arts disciplines of dance, drama or visual arts through the intensive study of technique, history, theory and hands-on approaches in studio work and/or performance.

The AFA degree is designed to provide students with the competencies necessary to achieve seamless articulation into a Bachelor of Fine Arts program. The program focuses on intensive technical training and artistic development, with emphasis on one of three major areas of concentration: dance, drama or visual arts.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

If you are considering a career in teaching, please read about the County College of Morris Teacher Education Specialization in Visual Arts (p. 202).

Degrees

AFA Dance

(P4170)

General Education Foundation

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<td>ENG-112 English Composition II</td>
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<td>BIO-133 Human Biology</td>
<td>3</td>
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<td>Math-Science-Technology</td>
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DAN-112 Dance Appreciation

LECT 3 hrs.

This course is designed for any student wishing to gain knowledge of the contemporary dance world and its relation to the other arts. Personalities, companies, productions, etc. are explored in the mediums of ballet, modern and musical theatre. Present and future trends in the dance world are emphasized through lectures, videos and live concerts. This is a non-movement lecture course; written assignments and exams are given and attendance at concerts is required.

DAN-117. Introduction to Ballet. 1 Credit.

LAB 2 hrs.

This course is for the student with little or no movement experience and is designed as an introduction to dance as an art form. Foundational techniques of ballet, modern and jazz dance are taught with specific attention to developing awareness of proper anatomical alignment. Dance history, terminology and injury prevention are also integrated into the coursework. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.

Additional Fees: Course fee applies.

DAN-112. Dance Appreciation. 3 Credits.

LECT 3 hrs.

This course is designed for any student wishing to gain knowledge of the contemporary dance world and its relation to the other arts. Personalities, companies, productions, etc. are explored in the mediums of ballet, modern and musical theatre. Present and future trends in the dance world are emphasized through lectures, videos and live concerts. This is a non-movement lecture course; written assignments and exams are given and attendance at concerts is required.

DAN-117. Introduction to Ballet. 1 Credit.

LAB 2 hrs.

This course is for the student with little or no movement experience and is designed to develop the foundational technique of classical ballet. Specific attention is given to proper execution of barre exercises, anatomical alignment and stretching, and strengthening of specific muscle groups. Formal body positions, spatial directions and classical ballet terminology are taught. Discussion of ballet companies, significant ballet personalities and injury prevention are also integrated into the coursework. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.

Additional Fees: Course fee applies.
DAN-125. Jazz I. 1 Credit.
LAB 2 hrs.
This course is for the student at a beginning experience level and is designed to introduce the jazz dance genre. Specific attention is given to exploring rhythms, body isolations and stylistic movements specific to jazz dance. The techniques of ballet and modern dance are integrated into the coursework and anatomical alignment is stressed for the purpose of injury prevention. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Additional Fees: Course fee applies.

DAN-126. Jazz II. 1 Credit.
LAB 2 hrs.
This course is for the student at an intermediate experience level and is a continuation of Jazz I. More advanced movements including greater intricacy and faster rhythms are taught. Students synthesize these movements into choreographed jazz dance sequences. Specific attention is given to the development of style and theatricality. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-125 or permission of department chair
Additional Fees: Course fee applies.

DAN-130. Tap Dance I. 1 Credit.
LAB 2 hrs.
This course is for students at a beginning experience level and is designed to introduce the tap dance genre. Specific attention is given to developing the skills necessary to articulate rhythmic sounds with the feet as well as the specific body carriage that accommodates rhythmic footwork. Classes include basic warm-up exercises and combinations along with lecture, demonstrations and videos. Students spend additional time in the studio to satisfy course time requirements. (Students need to provide their own tap shoes.) This course is open to non-dance majors as well as dance majors.
Additional Fees: Course fee applies.

DAN-131. Tap Dance II. 1 Credit.
LAB 2 hrs.
This course is for the student at an intermediate experience level and is a continuation of Tap Dance I. It is designed to more fully integrate the entire dancing body while developing more advanced footwork. Classes include intermediate warm-up exercises and traveling combinations along with lecture, demonstrations and videos. Students spend additional time in the studio to satisfy course time requirements. (Students need to provide their own tap shoes.) This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-130 or permission of department chair
Additional Fees: Course fee applies.

DAN-134. Dance History. 3 Credits.
LECT 3 hrs.
This course follows the historical development of dance from the movement of prehistoric humans to the theatrical dancing of the 21st century. Videos and examples of dance styles are used to exemplify the different periods of dance development. Written examinations, research papers, projects and attendance at dance concerts are required.
Additional Fees: Course fee applies.

DAN-135. Dance Theater Workshop. 1 Credit.
LAB 2 hrs.
Dance Majors only. This course is designed for the student interested in dance production. The course involves publicity work, costume, design, auditions, rehearsals and possible performance. Practical experience is gained by participating in concerts at County College of Morris, on stage and/or backstage. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DAN-136. Dance Theatre Workshop II. 1 Credit.
LAB 2 hrs.
This class develops the student as a performer, choreographer and/or backstage production artist. It is a continuation of Dance Theatre Workshop I and serves as a vehicle for active participation in the County College of Morris Dance Theatre. Students earn credit by contributing to the productions through publicity work, budgeting, ticketing, programming, backstage lighting work and/or performing and presenting original student works. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-135, Dance majors only
Additional Fees: Course fee applies.

DAN-137. Ballet I. 2 Credits.
LAB 4 hrs.
This course is for the student at a low intermediate level and is designed to develop the technical physical skills necessary for classical ballet. Specific attention is given to proper execution of barre and center exercises, anatomical alignment, and stretching and strengthening of specific muscle groups. Pirouettes, allegro jumping, transitional steps and ports de bras are taught. Formal body positions, spatial directions and classical ballet terminology are taught. Discussion of ballet companies, significant ballet personalities and injury prevention are also integrated into the coursework. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DAN-138. Ballet II. 2 Credits.
LAB 4 hrs.
This course is for the student at a beginning experience level and is a continuation of Ballet I. It is designed to more fully develop the skills necessary for classical ballet. Continued emphasis is given to pireouettes, petit and grand allegro jumping as well as utilizing transitional steps in longer enchainment. Discussion of ballet companies, significant ballet personalities and injury prevention are also integrated into the coursework. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-137 or permission of department chair
Additional Fees: Course fee applies.
DAN-141. Modern Dance I. 2 Credits.
LAB 4 hrs.
This course is for the student at a beginning experience level and is designed to develop the technical physical skills necessary for modern dance. The emphasis is on developing the body as an articulate instrument for expressing contemporary art through dance. Specific attention is given to the movements of the spine, arms and legs while maintaining anatomical alignment. Stationary floor exercises, movement phrases across the floor and movement improvisation are given. Discussion of modern dance companies, significant modern dance personalities and injury prevention are also integrated into the coursework. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DAN-142. Modern Dance II. 2 Credits.
LAB 4 hrs.
This course is for the student at a low intermediate experience level and is a continuation of Modern Dance I. Emphasis is on creative explorations of movement already learned. Specific attention is given to more advanced use of the spine and development of core muscle strength. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-141 or permission of department chair
Additional Fees: Course fee applies.

DAN-146. Dance for Musical Theatre. 1 Credit.
LAB 2 hrs.
This course is ideal for any student interested in Broadway theater. This course gives students a movement base for auditions, performance and choreography covering musical styles ranging from the 1920s through the millennium. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Additional Fees: Course fee applies.

DAN-211. Intermediate Ballet. 3 Credits.
LAB 6 hrs.
This course is for the student at the intermediate experience level and designed to continue the development of technical physical skills necessary for classical ballet. It builds upon the technical proficiencies achieved in Ballet I and II. Specific attention is given to more advanced footwork in allegro jumping, sustained movement in adagio exercises and more advanced pirouettes. Emphasis is given to developing style, theatrical quality and proper anatomical alignment. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-138 or permission of department chair
Additional Fees: Course fee applies.

DAN-212. Advanced Ballet. 3 Credits.
LAB 6 hrs.
This course is for the student at the advanced experience level and is a continuation of Intermediate Ballet. Specific attention is given to developing performance quality and audition techniques. This course is recommended for those students wishing to transfer into a four-year degree program in dance or those seeking a career in dance performance or instruction. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-211 or permission of department chair
Additional Fees: Course fee applies.

DAN-216. Intermediate Modern Dance. 3 Credits.
LAB 6 hrs.
This course is for the student at the intermediate experience level and is designed to continue the development of the technical physical skills necessary for modern dance. It builds upon the technical proficiencies achieved in Modern I and II. Emphasis is on creative movement and choreography, intricate combinations and movement for the stage. New techniques of contemporary artists are discussed and explored, with emphasis on technical mastery. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-142 or permission of department chair
Additional Fees: Course fee applies.

DAN-217. Advanced Modern Dance. 3 Credits.
LAB 6 hrs.
This course is for the student at the advanced experience level and is a continuation of Intermediate Modern Dance. Specific attention is given to developing the dancing body in intricate combinations of creative movement and choreography. Emphasis is on performance quality and audition techniques. This course is recommended for those students wishing to transfer into a four-year degree program in dance or those seeking a career in dance performance or instruction. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-216 or permission of department chair
Additional Fees: Course fee applies.

DAN-220. Dance Theatre Workshop III. 1 Credit.
LAB 2 hrs.
This class continues to develop the student as a performer, choreographer and/or backstage production artist. It is a continuation of Dance Theatre Workshop II and serves as a vehicle for active participation in the County College of Morris Dance Theatre. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-136 - Dance Majors Only
Additional Fees: Course fee applies.

DAN-222. Dance Theatre Workshop IV. 1 Credit.
LAB 2 hrs.
This class is the culmination of the dance student's participation in the County College of Morris Dance Theatre productions and a continuation of work done in Dance Theatre Workshop III. All aspects of dance production are covered with special emphasis on stage lighting. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-220 - Dance majors only
Additional Fees: Course fee applies.
DAN-224. Choreography I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course focuses on both individual and group creativity of new movement phrases using improvisation and other choreographic tools leading to actual compositions by the students. Movement and written assignments are given and student and professional choreography are viewed. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-141
Additional Fees: Course fee applies.

DAN-226. Choreography II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course continues to explore elements of creative dance learned in Choreography I. Musical interpretation, narrative, prop studies, etc. are stressed. Completed movement phrases leading to actual choreographed dances are developed and considered for the stage. Costuming, lighting and preparation for actual presentation are emphasized. Movement and written assignments, with a final presentation, are required. Students spend additional time in a laboratory setting as part of the course.
Prerequisites: DAN-224
Additional Fees: Course fee applies.

DAN-230. Dance Internship. 1 Credit.
LAB 2 hrs.
Dance Majors only. This course enables the student to complete on- or off-campus work/study in the dance field related to the student’s goals as a dance major. Experience is gained in the dance field workforce as a dancer, choreographer, instructor or pre-approved dance program off-campus or dance administrative work on or off campus. The work experience is documented by the student and overseen by the professor. Recommendations are given to prospective employers by the faculty observer. This class should be taken in the student’s final semester.
Prerequisites: Permission of department chair.
Design - Fine Arts

Associate in Fine Art Degree

The Associate in Fine Arts (AFA) degree focuses on developing an understanding of the specific arts disciplines of dance, drama or visual arts through the intensive study of technique, history, theory and hands-on approaches in studio work and/or performance.

The AFA degree is designed to provide students with the competencies necessary to achieve seamless articulation into a Bachelor of Fine Arts program. The program focuses on intensive technical training and artistic development, with emphasis on one of three major areas of concentration: dance, drama or visual arts.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

If you are considering a career in teaching, please read about the County College of Morris Teacher Education Specialization in Visual Arts (p. ).

Degrees

• Architecture: (p. 64) Emphasis within the AFA Design Option
• Fashion Design: (p. 64) Emphasis within the AFA Design Option
• Fashion Merchandising: (p. 65) Emphasis within the AFA Design Option
• Industrial Design: (p. 65) Emphasis within the AFA Design Option
• Interior Design: (p. 65) Emphasis within the AFA Design Option

AFA Design

(P4141)

The Design program offers preparatory studies in the fields of applied design: interior design, fashion design, fashion merchandising, architecture and industrial design. Students obtain a solid foundation in the visual arts and intermediate studies that focus on developing an understanding of design principles through the study of history, design theory and hands-on studio courses.

Project work explores various media applicable to a wide range of design professions. The program awards an Associate in Fine Arts (AFA) degree and is designed to transfer to four-year colleges as the first two years of a liberal arts baccalaureate. Design graduates major in industrial design, interior design, architecture, fashion design, fashion merchandising, design education (teaching design) or other design disciplines.

Architecture

A Track within Design

General Education Foundation

Communication

| ENG-111 | English Composition I |
| ENG-112 | English Composition II |

Media-Science-Technology

| MAT-123 | Precalculus |
| PHY-125 | General Physics I - Lecture |
| PHY-126 | General Physics I Laboratory |

Technology

| Social Science Elective | 3 |
| General Education Courses | 6 |
| ART-133 | Art History I |
| ART-134 | Art History II |

A Track within Design

General Education Foundation

Communication

| ENG-111 | English Composition I |
| ENG-112 | English Composition II |

Math-Science-Technology

| MAT-123 | Precalculus |
| PHY-125 | General Physics I - Lecture |
| PHY-126 | General Physics I Laboratory |

Technology

| Social Science Elective | 3 |
| General Education Courses | 6 |
| ART-133 | Art History I |
| ART-134 | Art History II |

Design/Fashion Design Core

| DSN-110 | History of Design |
| ART-122 | Drawing I |
| ART-130 | Two Dimensional Design |
| ART-131 | Color Theory |
| ART-132 | Three Dimensional Design |
| DSN-165 | Drawing for Designers |
| DSN-125 | Design Rendering |
| DSN-120 | Design Concepts I |
| DSN-220 | Design Concepts II |
| ART-230 | Portfolio & Presentation |
| ENR-117 | Computer-Aided Drafting I |
| ENR-118 | Computer-Aided Drafting II |
| Design Elective | 3 |
| Design Elective | 3 |
| Design Elective | 3 |

Total Credits

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<td>Design Concepts I</td>
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### Fashion Merchandising

#### A Track within Design

#### General Education Foundation

- **Communication**: 6 credits
  - ENG-111 English Composition I
  - ENG-112 English Composition II
- **Math-Science-Technology**: 7-8 credits
  - Mathematics Elective
  - Laboratory Science Elective
- **Technology**: 
- **Social Science Elective**: 3 credits
- **General Education Courses**: 6 credits
  - ART-133 Art History I
  - ART-134 Art History II
- **General Education Foundation Credits**: 22-23 credits

#### Design/Fashion Merchandising Core

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### Interior Design

#### A Track within Design

#### General Education Foundation

- **Communication**: 6 credits
  - ENG-111 English Composition I
  - ENG-112 English Composition II
- **Math-Science-Technology**: 7-8 credits
  - Mathematics Elective
  - Laboratory Science Elective
- **Technology**: 
- **Social Science Elective**: 3 credits
- **General Education Courses**: 6 credits
  - ART-133 Art History I
  - ART-134 Art History II
- **General Education Foundation Credits**: 22-23 credits

#### Design/Interior Design Core

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ART-230  Portfolio & Presentation  3
ENR-117  Computer-Aided Drafting I  2
ENR-118  Computer-Aided Drafting II  2
Design Elective  3
Design Elective  3
Design/Interior Design Core Credits  40
Total Credits  62-63

Faculty
James Howard
Assistant Professor, Visual Arts
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BFA, University of Illinois, Champaign-Urbana
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Kelly Whalen
Assistant Professor, Visual Arts
Special Projects, Design
M.I.D., Pratt Institute
B.A., Caldwell College
DH 201C  973-328-5416 kwhalen@ccm.edu

Courses
DSN-110. History of Design. 3 Credits.
LECT 3 hrs.
The History of Design is a survey of major developments of design as well as the methodology and cultural influences which impact particular designs. The nature, function and evolution of design are studied through innovations in the architectural, interior, industrial, decorative and fashion design realms. The development of concepts, their relationship to the historical and cultural movements, and the impact on surrounding art and design communities will be explored.

DSN-115. Basic Drafting. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Basic Drafting is a beginner’s course that provides a solid foundation for all design and engineering courses. The study of materials and techniques in this course introduces students to the many forms of graphical communication and how best to convey their ideas in a graphical form. Many techniques are explored from pencil on vellum to pen on Mylar with furthering rendering techniques studies modified to focus on the individual’s course direction.

DSN-120. Design Concepts I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Design Concepts I is a detailed exploration of scale and proportion through two- and three-dimensional sketch problems varying in levels of complexity and duration. Projects explore relationships between historical and cultural special systems and the relationship to the human proportion. Verbal and graphic communication skills are emphasized as a method of articulating the development of visual concepts and solutions to design problems. Communication tools such as perspective are explored in detail. Projects, which include architectural, interior design, fashion and industrial design are reviewed through juried presentations.
Prerequisites: ART-122, ART-130
Additional Fees: Course fee applies.

DSN-125. Design Rendering. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Design Rendering is an advanced-level studio course that builds on the work completed in Drawing I and II. It is especially geared for students majoring in Design. The course concentrates on producing virtual product, fashion, architecture and interior images through the means of controlled light. Emphasis is placed on setting up proper perspective and generating a line drawing as an underlay. Color marker techniques are stressed as well as color pencil. In addition, pen and ink techniques and water color are explored. Students are introduced to 3D computer modeling. At the end of the course, each student has a collection of portfolio quality renderings that demonstrate a high level of competence in a chosen field of design.
Prerequisites: DSN-120, ART-122, ART-130
Additional Fees: Course fee applies.

DSN-135. Fashion Construction Technology I. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course takes a hands-on approach to the development, construction and presentation of fashion apparel, custom made clothing and costuming for stage and screen. Construction techniques, fabrics, tools and equipment are explored in detail in the classroom and the community. Draping as a means of design and basic pattern drafting are explored. Students develop the skills necessary to construct and present projects of their own design to a panel of their peers and professionals.
Additional Fees: Course fee applies.

DSN-145. Introduction to Fashion and Visual Merchandising. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This class explores the interrelationship between the consumer and the various sectors of the fashion industry. Students learn the principles and techniques that fashion merchandisers use in making key decisions on buying and product sourcing, store planning and layout. Students review actual case studies and take on projects that engage the merchandising planning and decision-making process. This course is highly recommended for design and business students with interest in fashion merchandising and store plan layout.
Prerequisites: ART-122, ART-130, ENG-111 or permission of department chair
Corequisites: DSN-120
Additional Fees: Course fee applies.

DSN-146. Fashion Merchandising II. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course explores the interrelationship between the consumer and the various sectors of the fashion industry. Students learn the principles and techniques that fashion merchandisers use in making key decisions on buying and product sourcing, store planning and layout. Fashion as a retail component is also discussed. Students review actual case studies and take on product development projects designed to enhance their comprehension of the subject. Course introduces math as an applied principal to merchandising.
Prerequisites: DSN-145
Additional Fees: Course fee applies.
DSN-155. Costume Design and Construction. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This is a course in advanced sewing techniques that builds on skills developed in Fashion Construction Technology I and II. With costume design, construction and creative problem-solving serving as the base, students learn advanced techniques in haute couture tailoring and further develop their designed fashion lines and portfolios.
Prerequisites: DSN-120, DSN-135, DSN-160
Additional Fees: Course fee applies.

DSN-160. Fashion Construction Technology II. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This advanced course in fashion construction techniques concentrates on the details that set couture sewing apart from ready-to-wear and standard home sewing. The student explores hand-detailed sewing, speed techniques and embellishment while improving their skills in construction. Basic sewing knowledge is a must for this class.
Prerequisites: DSN-135 or permission of department chair

DSN-165. Drawing for Designers. 3 Credits.
LECT 1 hr., LAB 4 hrs.
A studio course that introduces the design student to the many techniques of drawing desired as a design professional. The course explores perspective, line quality and the graphic visualization process as well as method, materials and subject matter. Students learn to use rapid visualization skills in solving complex design problems.
Prerequisites: ART-122
Additional Fees: Course fee applies.

DSN-166. Independent Study in Design. 1-3 Credits.
LECT 3 hrs.
This course provides an opportunity for selected students to participate in independent work under close supervision of a Design faculty member. Interested students should make their interest known to the department chair early in the prior semester. The chair will determine criteria for selection.
Prerequisites: Permission of department chair.

DSN-220. Design Concepts II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Design Concepts II is a continuation of Design Concepts I through projects focusing on the design methodology of problem solving. Projects explore issues through sketches and three-dimensional scaled models of products and spaces. Students are expected to draw from their total design, visual and technical experiences in the development and communication of visual concepts. Projects include architectural, industrial design, interior design and fashion. Project work will be reviewed through juried presentations. The role of CAD as a design tool is introduced.
Prerequisites: DSN-120
Additional Fees: Course fee applies.

DSN-234. Independent Study in Design. 1-3 Credits.
LECT 3 hrs.
This course provides an opportunity for selected students to participate in independent work under close supervision of a Design faculty member. Interested students should make their interest known to the department chair early in the prior semester. The chair will determine criteria for selection.
Prerequisites: Permission of department chair.

DSN-235. Fashion Design Computer. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Fashion Design and Fashion Merchandising students learn to design fashion garments and generate fashion promotional utilizing the computer and advanced digital imaging software. Adobe Illustrator and Photoshop are utilized along with other modeling programs.
Prerequisites: DSN-120 or permission of department chair.

DSN-291. Special Topics in Design I. 3 Credits.
LECT 1 hr., LAB 4 hrs.
The Special Topics in Design I course allows for the insertion of relevant but unscheduled courses into the curriculum. The course content includes specific technical or aesthetic topics that have both a lecture and a laboratory (studio) component in an area of Design.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DSN-292. Special Topics in Design II. 3 Credits.
LECT 1 hr., LAB 4 hrs.
The Special Topics in Design II course allows for the insertion of relevant but unscheduled courses into the curriculum. The course content includes specific technical or aesthetic topics that have both a lecture and a laboratory (studio) component in an area of Design.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DSN-293. Special Topics in Design III. 3 Credits.
LECT 3 hrs.
The Special Topics in Design III course allows for the insertion of relevant but unscheduled courses into the curriculum. The course content includes specific technical or aesthetic Design topics that may be delivered in a lecture format.
Prerequisites: Permission of department chair.
Digital Media Technology

Associate in Applied Science Degree

This Associate in Applied Science degree is designed to prepare students to enter the field of multimedia technology – digital media, computer animation, game design, digital video/audio production, web design and multimedia for the web. Specialized classes using industry-standard software and hardware prepare students for careers in multimedia design, development and delivery. Technical emphasis courses afford students an opportunity to explore disciplines of interest to them such as game design, broadcasting, graphic design, journalism, music, photography, web development or mobile app design.

For more information, visit the Information Technologies Department website (http://www.ccm.edu/academics/divdep/BMET/infotech).

Degrees

Associate in Applied Science Degree

Technology-based courses taken by a student at least seven years prior to the time the student applies for graduation may not be applied to a degree or certificate within the Department of Information Technologies.

- AAS Digital Media Technology Track 1 - Broadcasting (p. 68)
- AAS Digital Media Technology Track 2 - Game Design (p. 68)
- AAS Digital Media Technology Track 3 - Graphic Design (p. 68)
- AAS Digital Media Technology Track 4 - Journalism (p. 68)
- AAS Digital Media Technology Track 5 - Music (p. 68)
- AAS Digital Media Technology Track 6 - Photography (p. 69)
- AAS Digital Media Technology Track 7 - Web Development (p. 69)
- AAS Digital Media Technology Track 8 - Mobile App Design (p. 69)

AAS Digital Media Technology

(P3530)

General Education Foundation

Communication

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<td>CMP-244</td>
<td>Web Design II</td>
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CMP-245 Web Design Tools 3
MED-110 Multimedia I 3
MED-113 Multimedia II 3
MED-114 Media Aesthetics 3
MED-119 Digital Media Production 3
MED-210 Digital Video Editing 3
MED-213 Multimedia Authoring & Design 3
or CMP-250 Game Production
MED-220 Animation 3
Technical Tracks 6
Free Elective 3-4
Digital Media Technology Core Credits 39-40
Total Credits 60-63

Broadcasting

Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

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<td>MED-212</td>
<td>Television Production II</td>
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Game Design

Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

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<td>MED-240</td>
<td>Advanced Animation</td>
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Graphic Design

Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

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<td>GRD-118</td>
<td>Typography I</td>
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Journalism

Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

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<tr>
<td>COM-209</td>
<td>Editing and Publication Design</td>
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Music

Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

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<td>MUS-112</td>
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<tr>
<td>MUS-124</td>
<td>Electronic Music II</td>
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</table>
Photography
Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

PHO-115  Photography I  3
PHO-204  Digital Imaging I  3

Web Development
Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

CMP-128  Computer Science I  3
CMP-249  Advanced Web Programming  3

Mobile App Design
Along with the Course List in the AAS Digital Media Technology program, students interested in this track should take the following courses.

CMP-128  Computer Science I  3
CMP-170  Mobile App Design  3

Certificates of Achievement
Media Technology

A Certificate of Achievement within Digital Media Technology
(P0360)

The Certificate of Achievement in Media Technology is a compact collection of courses in media production skills that enables individuals to work effectively in the creative aspects of digital media. The program is flexible so students may concentrate in a particular area of interest or build a broad repertoire of basic production skills. It is intended for working professionals who wish to gain or enhance skills needed to find employment or advance their careers in media-related occupations including advertising, broadcasting, marketing, multimedia development, public relations and training.

MED-110  Multimedia I  3
MED-119  Digital Media Production  3
Restricted Electives 1  9
Select three of the following:
MED-113  Multimedia II
MED-114  Media Aesthetics
MED-210  Digital Video Editing
MED-211  Television Production I
MED-212  Television Production II
MED-220  Animation
MED-240  Advanced Animation
MED-292  Special Topics in Media
or MED-293  Special Topics in Media
CMP-108  Game Design Concepts

Total Credits 15

1 Students should consult their academic advisors when selecting these courses.

Faculty
Patricia Tamburelli
Assistant Professor, Information Technologies
M.A., Seton Hall University
B.A., B.S., Jersey City University
EH 221 973-328-5799 ptamburelli@ccm.edu

Courses
MED-110. Multimedia I. 3 Credits.
LECT 3 hrs.
Multimedia I is a survey course designed to allow students to explore, discuss, develop and use multimedia technology. This computer-based course offers an extensive overview of the technologies of multimedia. Students engage in issues related to usability, management and distribution. Topics include multimedia development and design, media elements, and emerging hardware and software trends. A multimedia prototype project that demonstrates conceptual and technical understanding is required.

Additional Fees: Course fee applies.

MED-113. Multimedia II. 3 Credits.
LECT 3 hrs.
An advanced course designed to allow students to apply the theory and basic practical knowledge presented in Multimedia I. Students apply their knowledge productions for DVD, local networks or the Internet. Students incorporate traditional media production elements such as video and audio combined with the latest features and technologies. Conceptualization, user interface design and prototyping are key course elements. A multimedia prototype project that demonstrates conceptual and technical understanding is required.

Prerequisites: MED-110

Additional Fees: Course fee applies.
**MED-114. Media Aesthetics. 3 Credits.**
LECT 3 hrs.
Media Aesthetics looks at the importance, influence and meaning of visual images designed for use in electronic media. Through current and historical examples, students learn the principles and significance of media aesthetics including light and color, space and structure, time and motion, and sound, and how they are used to optimize effective communication. Students learn how aesthetic elements of television and multimedia have been translated into vectors - forces that push or pull users in certain directions. Operationally, students learn how to interpret, order, clarify and intensify various communications including fiction, by applying appropriate aesthetic principles. Comparisons between television and multimedia images are closely examined. Students may apply knowledge of media aesthetics by producing projects using broadcast and digital media facilities.
**Additional Fees:** Course fee applies.

**MED-117. Introduction to Broadcasting. 3 Credits.**
LECT 3 hrs.
This course offers a historical and content analysis approach to the study of broadcast and narrowcast communications. Included are the research and study of systems, regulations, program genres, social effects on audiences, and the future of the industry. This is accomplished via lectures and discussions, handouts, reading assignments and in-class viewing and listening assignments.
**Prerequisites:** Placement basis or ENG-025 or ENG-022 or ENG-007.

**MED-119. Digital Media Production. 3 Credits.**
LECT 3 hrs.
This course provides students with theory and training in the area of digital content development for digital media productions. Software and hardware training in digital video, audio, animation and graphics are introduced. In addition, the appropriate use of these areas of content in developing digital media productions and interface design are discussed.
**Additional Fees:** Course fee applies.

**MED-210. Digital Video Editing. 3 Credits.**
LECT 2 hrs., LAB 2 hrs.
Through hands-on learning, Digital Video Editing provides students with the fundamental principles of video editing with a focus on the techniques and technology used to achieve a superior final product. An in-depth exploration of non-linear editing concepts includes a deeper understanding of primary, secondary and tertiary motion, shot types, sequencing, transitions and continuity. Students learn to log and capture raw video, assemble shots on a timeline, create, add, and edit text, audio tracks, title animation, effects, transitions, continuity and video compositing. This course is ideal for students who wish to create and edit a professional video for broadcast, webcast and other motion media venues.
**Prerequisites:** MED-113 or MED-211
**Additional Fees:** Course fee applies.

**MED-211. Television Production I. 3 Credits.**
LECT 3 hrs.
This course introduces students to the basic operation of a television studio and the production process. Students learn techniques and develop skills in various studio functions including camera, switching, sound, lighting, teleprompter, scriptwriting and directing. Collaboration and teamwork are emphasized.
**Additional Fees:** Course fee applies.

**MED-212. Television Production II. 3 Credits.**
LECT 3 hrs.
Students employ skills learned in Television Production I and learn advanced production skills including studio and remote producing, remote-location video shooting, digital editing, advanced special FX generation and switching, and set design via a "live on tape" production of an actual television program.
**Prerequisites:** MED-211
**Corequisites:** MED-210
**Additional Fees:** Course fee applies.

**MED-213. Multimedia Authoring and Design. 3 Credits.**
LECT 3 hrs.
Using industry-standard authoring software, students apply multimedia technology to assemble a real-world interactive multimedia project. Concepts and principles of user interface design, digital audio and video production, team production techniques and usability testing are employed. As members of a production team, students plan, manage and implement a complex multimedia production project to be used on DVD, a local network or the Internet for a participating business partner.
**Prerequisites:** MED-113
**Additional Fees:** Course fee applies.

**MED-220. Animation. 3 Credits.**
LECT 3 hrs.
This is an advanced production course utilizing 3D modeling and animation software to create animated imagery for video and multimedia applications. Software includes 3D Studio Max (3D animation) and Adobe Premiere and AfterEffects (digital video). Through assigned projects, students learn to combine live video and animation with compositing and bluescreening techniques.
**Additional Fees:** Course fee applies.

**MED-224. Independent Study in Media. 3 Credits.**
LECT 3 hrs.
Students, in consultation with a media advisor, undertake an in-depth analysis of a selected topic, problem or issue related to media or pursue additional media-related work experience. Students are responsible for developing a statement of goals, maintaining a weekly log and preparing a written and oral summary report. Available only to Digital Media Technology majors.
**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

**MED-228. Cooperative Work Experience- Media Stud. 3 Credits.**
COOP 3 hrs.
Actual applications of classroom learning in a supervised on-the-job training experience takes place daily. Students pursue their career objectives in the broadcasting arts or digital media area following a training plan with the assistance of the department chair and on-the-job supervisor. Interested students should consult with the Department of Information Technologies chair. Available only to Digital Media Technology majors.
**Prerequisites:** MED-212 or MED-213
**Co-requisites:** MED-229.
MED-229. Cooperative Work Experience-Media Related Class. 1 Credit.
LECT 1 hr.
This course provides a variety of exercises that further develop students' technical skills, occupational adjustment and career development competencies. Exercises help to develop interpersonal and communication skills and help to ensure a positive cooperative work experience. This course is offered online. Available only Digital Media Technology majors.
Prerequisites: MED-212 or MED-213
Corequisites: MED-228.

MED-230. Media Internship. 3 Credits.
LECT 3 hrs.
Practical experience in the media career field is gained working part-time in an approved, supervised media-related environment or on an approved media-related project under the supervision of a media instructor and/or on-the-job supervisor. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair.

MED-240. Advanced Animation. 3 Credits.
LECT 3 hrs.
This advanced-level course is a continuation of MED-220 Animation and is designed to expose students to high-end 3-D modeling tools for digital animation, electronic post-production, digital special effects and digital multimedia. This course explores advanced applications in digital compositing, particle systems, Newtonian algorithms, kinemation, dynamation and 3-D characters.
Prerequisites: MED-220
Additional Fees: Course fee applies.

MED-291. Special Topics in Media. 1 Credit.
LECT 3 hrs.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-292. Special Topics in Media. 3 Credits.
LECT 1 hr.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-293. Special Topics in Media. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
Drama - Fine Arts

Associate in Fine Art Degree

The Associate in Fine Arts (AFA) degree focuses on developing an understanding of the specific arts disciplines of dance, drama or visual arts through the intensive study of technique, history, theory and hands-on approaches in studio work and/or performance.

The AFA degree is designed to provide students with the competencies necessary to achieve seamless articulation into a Bachelor of Fine Arts program. The program focuses on intensive technical training and artistic development, with emphasis on one of three major areas of concentration: dance, drama or visual arts.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

If you are considering a career in teaching, please read about the County College of Morris Teacher Education Specialization in Visual Arts (p. ).

Degrees

AFA Drama

(P4150)

General Education Foundation

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Drama Core Credits 44

Total Credits 64-66

Faculty

Dr. Robert Cioffi
Professor, English
Special Projects, Drama
Ph.D., M.A., New York University
B.A., Seton Hall University
CH 329 973-328-5465 rcioffi@ccm.edu

Courses

DRA-110. Acting I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course concentrates on the basic principles of acting. Students are expected to apply these principles in frequent exercises, mimes, improvisations and at least four major roles.

DRA-112. Acting II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
An advanced course in acting with emphasis on scene work. Students are responsible for the rehearsal, presentation and written analysis of six scenes.
Prerequisites: DRA-110 or permission of department chair.

DRA-114. The Drama Workshop. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an introduction to the major elements of play production, both onstage (improvisation, mime, acting) and backstage (set design, costuming, makeup). These skills are investigated through in-class exercises and culminate in the presentation of a short scene.

DRA-116. Dramatic Performance I. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-118. Dramatic Performance II. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theatre. Students participate as actors, technicians and crew members.

DRA-210. Acting III. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
An advanced course that applies the scene study techniques from Acting II to roles from the classical repertoire. Students present scenes from Greek tragedy, Shakespeare, Commedia dell’Arte, as well as representative scenes from modern and contemporary theatre. A written scene analysis is required for each presentation.
Prerequisites: DRA-110 and DRA-112.

DRA-213. Acting IV. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course focuses on advanced scene work as well as the practical aspects of life as a working actor. Auditioning, landing a role, preparing resumes and head-shots, finding agents, etc. are some of the topics discussed.
DRA-216. Dramatic Performance III. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-218. Dramatic Performance IV. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-220. Voice for the Actor. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course develops the student's awareness of the vocal mechanism through the use of the Linklater approach. The focus of this course is in feeling and experiencing the voice and how it works. Each student participates in a Master Class situation.

DRA-222. Movement for the Actor. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an experiential creative workshop based on Laban Movement Analysis to develop the performer's movement, description, observation and performance skills.

DRA-224. Introduction to Technical Theatre. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course takes a hands-on approach to all the steps required to mount a full production: set design and set construction, lighting, sound and special effects. Students are required to work as members of the various technical crews for the main-stage productions during the semester.

DRA-229. Directing. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is designed to acquaint students with the basic function and the importance of the director in theatre, simultaneously providing them with the opportunity for practical, creative, hands-on directing experience. Class work includes lecture, discussion, and the directing of a number of short scenes and the preparation of a professional promptbook.
Prerequisites: DRA-114.

DRA-231. Internship in Theatre Arts. 3 Credits.
LECT 3 hrs.
The County College of Morris/Shakespeare Theatre of New Jersey at Drew University Internship enables students to apply classroom theatre knowledge to a supervised practical experience in a professional theatre. Internship requirements of a minimum of 150 hours are met through significant participation in the backstage, production, stage and house management of the Shakespeare Theatre, with the opportunity to audition for activities onstage. Students are required to participate in three different capacities in three Shakespeare Theatre productions during the semester.
Prerequisites: DRA-110, DRA-116 and DRA-114 or DRA-224; Minimum 2.0 grade point average; permission of department chair
Corequisites: DRA-232.

DRA-232. Internship/Theatre Arts - Related Class. 1 Credit.
LECT 1 hr.
A related class designed to supplement the student's work experience. Weekly meetings include discussion, written assignments and critical analysis of the internship experience.
Prerequisites: DRA-110, DRA-116 and DRA-114 or DRA-224; Minimum 2.0 grade point average; permission of department chair
Corequisites: DRA-231.
Early Childhood Education
Associate in Science Degree

The Associate in Science degree in Early Childhood Education focuses on ensuring that candidates develop theoretical and practical knowledge in such areas as humanities, mathematics and technology, social sciences, biological and physical sciences, the arts, multicultural and global perspectives, and personal health and fitness.

An Associate in Science in Early Childhood Education is appropriate for those students who may wish to transfer and earn a baccalaureate degree in Early Childhood Education. Graduates have several options upon the successful completion of this program. The program prepares students to work as early childhood professionals in a childcare setting. GPA requirements for teacher education degrees vary. If you are planning to transfer, contact the institution for admissions requirements.

For more information, visit the Early Childhood Education website (http://www.ccm.edu/academics/degrees/earlychilded.aspx).

Degrees
AS Early Childhood Education
(P2940)

General Education Foundation
Communication 6
- ENG-111 English Composition I
- ENG-112 English Composition II
Math-Science-Technology 10-12
- Mathematics Elective
- Laboratory Science Elective
  CMP-126 Computer Technology and Applications
  or CMP-203 Computer Software Applic. (MS Office)
Social Science 3
- PSY-113 General Psychology
- General Education Course 3
  COM-109 Speech Fundamentals
- Social Science or Humanities 3
  SOC-120 Principles of Sociology
- Humanities Elective - Choose from General Education Course List (humanities) 3
  Diversity History Elective 3
General Education Foundation Credits 31-33

Early Childhood Education Core
PSY-213 Child Psychology 3
PSY-217 Educational Psychology 3
ART-101 Art Start - a Creative Experience 3
MUS-129 Music - Early Childhood 3
ENG-118 Children's Literature 3
CDC-110 Early Childhood Development 3
EDU-111 Teaching in America Contempoary Issues 3
EDU-211 Behavior Observation in Education 3
SOC-202 Contemporary Social Issues 3
SOC-209 The Family 3
CDC-228 Cooperative Work Experience- Child Care 3
CDC-229 Cooperative Work Experience-Child Care - Related Class 1
Early Childhood Education Core Credits 34
Total Credits 65-67

Certificates
Early Childhood Development
A Certificate within Early Childhood Education
(P5134)

This program is designed to prepare students for a career in the field of child care. The Early Childhood Development Certificate is an in-depth credential for the early childhood teacher. Upon completion of 34 credits, individuals are eligible for a County College of Morris certificate.

Students are required to meet with the department advisor to review their curriculum and discuss educational and career goals. You can reach an advisor by contacting the Psychology department at 973-328-5631.

Communications 3
- ENG-111 English Composition I
Humanities 6
- ENG-118 Children's Literature
- MUS-129 Music - Early Childhood
Social Science 15
- PSY-113 General Psychology
- PSY-213 Child Psychology
- PSY-217 Educational Psychology
- SOC-120 Principles of Sociology
- SOC-209 The Family
Child Development 10
- CDC-110 Early Childhood Development
- CDC-228 Cooperative Work Experience- Child Care 1
- CDC-229 Cooperative Work Experience-Child Care - Related Class
- ART-101 Art Start - a Creative Experience
Total Credits 34

1 Students should consult their academic advisors when selecting these courses.
Faculty
Barbara Karpinski
Professor, Psychology
Special Projects, Early Childhood Education
MSW, Rutgers University
B.A., Rutgers University
DH 323 973-328-5612 bkarpinski@ccm.edu

Courses

CDC-110. Early Childhood Development. 3 Credits.
LECT 3 hrs.
This course focuses on the growth and development of the child, birth through age 8. Special emphasis is placed on cognitive, language, physical, social and emotional development. It covers a variety of factors that influence child development. The objectives of this course are for the student to understand that a variety of factors influence the behavior of the child. In understanding the capability of the developing child, the early childhood teacher will be better enabled to provide the child with appropriate care. A field work component includes observations of children's behavior in an early childhood setting. The purpose is to understand the need for goals, helping the child achieve these goals and providing for individual differences.

CDC-228. Cooperative Work Experience- Child Care. 3 Credits.
COOP 3 hrs.
This course provides selected students in the Early Childhood programs with job-oriented training and practical experience in a work environment. Students desiring to participate in this experience should make this intention known to the faculty advisor at the beginning of their third semester.
Prerequisites: ENG-111, ENG-118, MUS-129, PSY-113, PSY-213, PSY-217, SOC-120, SOC-209
Corequisites: CDC-229.

CDC-229. Cooperative Work Experience-Child Care - Related Class. 1 Credit.
LECT 1 hr.
A supplement to the cooperative work experience program, this course provides a variety of experiences to further enhance students' career development and occupational development. It also develops positive points of view toward human relationships and the responsibilities of both the employee and the employer.
Prerequisites: ENG-111, ENG-118, MUS-129, PSY-113, PSY-213, PSY-217, SOC-120, SOC-209
Corequisites: CDC-228.

EDU-111. Teaching in America. 3 Credits.
LECT 3 hrs.
This course presents the historical and philosophical foundations of American education and how they relate to contemporary issues facing teachers in America today. The goal is to provide students with a comprehensive understanding of the development of the teaching profession including both its roots and modern-day direction. The course offers theoretical and practical learning experiences including 5 hours of field experiences in public schools.
Prerequisites: All basic skills/remediation in English must be completed. Permission of department chair, Cumulative GPA of 3.0 or higher
Corequisites: PSY-113.

EDU-211. Behavior Observation in Education. 3 Credits.
LECT 3 hrs.
This course uses weekly seminars and 20 hours of field experience in public schools to integrate theory and classroom observations in order for prospective teachers to understand curriculum development and instructional methods. Aspiring teachers learn how to use descriptive research methods to gain insight into the instructional needs of learners by observing them in their natural classroom settings. Armed with this experiential knowledge, students use the seminar to report and discuss their observed findings, as well as relate this practical information to the theories of curriculum development and instructional strategies.
Prerequisites: EDU-111, PSY-113 and permission of department chair, Cumulative GPA of 3.0 or higher
Corequisites: PSY-217.
Electronics Engineering Technology

Associate in Applied Science Degree

The Electronics Engineering Technology program is a two-year career-oriented curriculum that prepares students for positions in electronics industries and related electronics service. Job activities center on technical problem-solving and the practical application of engineering.

The specific educational objectives of the Electronics Engineering Technology program are to:

1. produce graduates who are employed and operate effectively in positions that lie between those of the skilled craftsperson and those of the graduate electrical engineer
2. produce graduates who can successfully transfer and complete a baccalaureate degree program in Electronics Engineering Technology

After obtaining an Associate in Applied Science degree, it is possible to continue at a four-year college and to complete a Bachelor of Science degree in Engineering Technology. No prior knowledge of electronics is necessary to enter the Electronics Engineering Technology program. Core electronics courses are sequenced along with applied mathematics and science to develop a broad background in the technology. Each electronics course contains a laboratory, which utilizes modern test instruments and applies classroom theory to practical applications.

In the second year of study, students interested in health-related fields may select the Biomedical Equipment option. Cooperative Education, a work-study program with local electronic firms, is available.

The Electronics Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET. You can find more information on the commission at the ABET website (http://www.abet.org).

Articulation Agreements

An existing agreement with New Jersey Institute of Technology (NJIT) provides students with a local transfer opportunity. Students should check with the Transfer Office about the latest articulation agreements for this program both locally and nationally.

For more information, visit the Electronics Engineering Technology website (http://www.ccm.edu/academics/degrees/elecengtech.aspx).

Degrees

• AAS Electronics Engineering Technology (p. 76)
• AAS Electronics Engineering Technology - Biomedical Equipment Option (p. 76)

AAS Electronics Engineering Technology

(P3600)

General Education Foundation

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General Education Foundation Credits 20

Electronics Core

ELT-201 Electricity and Electronics 4
ELT-115 Active Circuit Components 3
ELT-110 Digital Principles 3
ELT-209 Advanced Digital & Microprocessors 4
ELT-210 Electronic Fabrication 1
ELT-213 Active Circuit Design 4
ELT-215 Industrial Electronics 4
ELT-231 Electronic Communication Systems 4
ENR-177 Computer-Aided Drafting I 2
ENR-119 Technical Computer Applications 1
ENR-120 Technical Computer Programming 2
ENR-124 Instrumentation and Measurements 2
PHY-111 Technical Physics I 4
PHY-112 Technical Physics II 4
Technical Elective 3
Electronics Core Credits 45
Total Credits 65

AAS Biomedical Equipment

An Electronics Engineering Technology Option

(P3601)

General Education Foundation

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<td>General Education</td>
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General Education Foundation Credits 20

Electronics Engineering Technology Biomedical Equipment Option Core
**Basic Electronics**

A Certificate of Achievement within Electronics Engineering Technology  
(P0631)

The Basic Electronics Certificate of Achievement is designed for present or future professionals who seek to improve their technical knowledge and skills in certain areas. The certificate is balanced with theory and hands-on experience. This certificate provides and introduction to electronic theories and applications. It's possible to complete the certificate within a year and the courses fully transfer to the Electronics Engineering Technology degree.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<td>ENR-119</td>
<td>Technical Computer Applications</td>
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<td>MAT-110</td>
<td>College Algebra</td>
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<td>ELT-115</td>
<td>Active Circuit Components</td>
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<td>ELT-201</td>
<td>Electricity and Electronics</td>
<td>4</td>
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<td>ENR-117</td>
<td>Computer-Aided Drafting I</td>
<td>2</td>
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<tr>
<td>ENR-124</td>
<td>Instrumentation and Measurements</td>
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<td>PHY-111</td>
<td>Technical Physics I</td>
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<tr>
<td>ELT-231</td>
<td>Electronic Communication Systems</td>
<td>4</td>
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<tr>
<td>ELT-209</td>
<td>Advanced Digital &amp; Microprocessors</td>
<td>4</td>
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<tr>
<td>ENR-117</td>
<td>Computer-Aided Drafting I</td>
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<td>ENR-124</td>
<td>Instrumentation and Measurements</td>
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<tr>
<td>ELT-201</td>
<td>Electricity and Electronics</td>
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Total Credits: 13

**Advanced Electronics**

A Certificate of Achievement within Electronics Engineering Technology  
(P0637)

The Advanced Electronics Certificate of Achievement is designed for present or future professionals who seek to improve their technical knowledge and skills in certain areas. The certificate is balanced with theory and hands-on experience. This certificate provides an advanced introduction to the theories and techniques used in the analysis of electronic circuits. It is possible to complete the certificate within a year and the courses fully transfer to the Electronics Engineering Technology degree.

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<td>ELT-213</td>
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<tr>
<td>ELT-215</td>
<td>Industrial Electronics</td>
<td>4</td>
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<td>ELT-231</td>
<td>Electronic Communication Systems</td>
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<tr>
<td>ELT-110</td>
<td>Digital Principles</td>
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<td>ELT-209</td>
<td>Advanced Digital &amp; Microprocessors</td>
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<td>ENR-119</td>
<td>Technical Computer Applications</td>
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Total Credits: 12

**Certificates of Achievement**

- Digital Technology - A Certificate of Achievement within Electronics Engineering Technology  (p. 77)
- Basic Electronics - A Certificate of Achievement within Electronics Engineering Technology  (p. 77)
- Advanced Electronics - A Certificate of Achievement within Electronics Engineering Technology  (p. 77)

**Digital Technology**

A Certificate of Achievement within Electronics Engineering Technology  
(P0629)

The Digital Technology Certificate of Achievement is designed for present or future professionals who seek to improve their technical knowledge and skills in certain areas. The certificate is balanced with theory and hands-on experience. This certificate provides a strong foundation in digital theories and applications. It’s possible to complete the certificate within a year and the courses fully transfer to the Electronics Engineering Technology degree.

<table>
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<td>ELT-110</td>
<td>Digital Principles</td>
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<td>ELT-209</td>
<td>Advanced Digital &amp; Microprocessors</td>
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<td>ENR-119</td>
<td>Technical Computer Applications</td>
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<td>ENR-120</td>
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Total Credits: 13

**Faculty**

Venancio L. Fuentes, P.E.  
Chairperson, Engineering Technologies/Engineering Science  
Professor, Engineering Technologies  
MEE, Stevens Institute of Technology  
BEE, Stony Brook University  
SH 303 973-328-5766 vfuentes@ccm.edu (973-328-5766vfuentes@ccm.edu)

Jefferson Cartano  
Instructor, Physics and Engineering  
M.S., Stanford University  
BSBE, University of Pennsylvania  
SH 273A 973-328-5762 jcartano@ccm.edu
Courses
ELT-110. Digital Principles. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course develops the fundamentals of the binary system. Circuit implementation from Boolean functions and map minimization. Course includes study of combinational logic, sequential logic circuits, flip-flops, counters and shift register. The laboratory allows the student to apply theory to practical digital circuits.
Additional Fees: Course fee applies.

ELT-115. Active Circuit Components. 3 Credits.
LECT 2 hrs., LAB 4 hrs.
This course introduces the behavior of semiconductor electronic devices and develops the device characteristics. Some DC and AC circuit theory is expanded upon so that the active devices can be properly analyzed. Biasing techniques and models of amplifier configurations are stressed for the bipolar transistor and field effect devices. Diodes, rectifiers, filtering and switching circuit applications are studied. Laboratory includes the verification of device characteristics and the testing of basic amplifier and switching configurations.
Prerequisites: ELT-115 and ELT-201
Additional Fees: Course fee applies.

ELT-121. Circuit Analysis. 4 Credits.
LECT 3 hrs., LAB 4 hrs.
This course introduces the student to both DC and AC circuit theory. It includes Ohm's and Kirchoff's laws for analysis of series and parallel circuits. Computer circuit simulation of series-parallel, ladder and bridge networks in both DC and AC are analyzed. Resonance and frequency response are included along with some discussion of AC power and transformers. The laboratory experiments are designed to support the theory and obtain measurement skills.
Prerequisites: MAT-110 or equivalent and ENR-124
Additional Fees: Course fee applies.

ELT-123. Studio Maintenance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
For Music Recording majors only. This course provides students an introduction to music studio electronics. Basic skills of working with electronic components are covered, including soldering, the use of electronic measuring equipment and troubleshooting procedures. Studio cabling and infrastructure are dealt with extensively. Various wiring schemes and grounding techniques are examined to give the student an understanding of the typical music studio layout found in the professional environment. This course is for Music Recording majors only and does not serve as a technical elective for the Electronics Engineering Technology major. This course is offered in the Fall and Spring semesters.
Prerequisites: MUS-165
Additional Fees: Course fee applies.

ELT-200. Biomedical Electronics. 3 Credits.
LECT 3 hrs.
This course is the study of the techniques and theory behind the instrumentation utilized in hospital and health-related laboratory work. Emphasis is placed on physiological signals derived from the body and the problems and safety issues associated with their measurement. Demonstrations are conducted in class.
Prerequisites: ELT-115 and ELT-201.

ELT-201. Electricity and Electronics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is a fundamental study of electricity and electronics for Engineering Technology majors. The principles of electrical components and circuits are studied in class and laboratory. Topics include DC, AC series and parallel circuits, transformers and power supplies, solid state amplifiers and control components. The laboratory enables the student to apply the theory discussed in class and to gain some proficiency in the use of electronic measuring equipment.
Prerequisites: MAT-110 or equivalent and ENR-124
Additional Fees: Course fee applies.

ELT-209. Advanced Digital and Microprocessors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is an extension of digital theory into the operation and interfacing of microprocessors. Major topics include sequential logic design, memory organization, microprocessor architecture, machine level programming, A/D and D/A conversion, and serial and parallel interfacing. An associated laboratory provides for hands-on microprocessor interfacing and the use of logic analyzers.
Prerequisites: ELT-110 and ENR-120 or CMP-128
Additional Fees: Course fee applies.

ELT-210. Electronic Fabrication. 1 Credit.
LAB 3 hrs.
This course provides students with an opportunity to learn about the process involved in the fabrication of electronic circuit boards. Using computer-aided drafting tools, students create an electronic component layout and necessary art work for the construction of a printed circuit board. Students are introduced to project management concepts and techniques, soldering, test specifications and printed circuit board construction. A term project or a series of smaller projects enables students to manage, build and assemble a printed circuit board and develop test specifications.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ELT-213. Active Circuit Design. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers analysis and design of solid-state amplifiers using bipolar and field effect transistors. Topics include frequency response using Bode plots and feedback analysis as applied to operational amplifiers and oscillators. Laboratory verification includes transistors, amplifiers, power amplifiers, IC operational amplifiers and oscillators.
Prerequisites: ELT-115 and either ELT-121 or ELT-201
Additional Fees: Course fee applies.

Edward Osoliniec, P.E.
Associate Professor, Engineering Technologies
MSEE, University of California Berkeley
BSEE, New Jersey Institute of Technology
SH 273 A 973-328-5767 eosoliniec@ccm.edu

Additional Fees:
Course fee applies.

Prerequisites:
ELT-115 and either ELT-121 or ELT-201

Additional Fees: Course fee applies.
ELT-215. Industrial Electronics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers operational amplifiers in linear, non-linear and active filter applications, pulse and wave-shaping techniques, power supplies and regulators, thyristor control of power and transducers. The laboratory includes experiments in design and tests to support the above topics.
Prerequisites: ELT-209 and ELT-115
Additional Fees: Course fee applies.

ELT-227. Biomedical Clinical Experience. 3 Credits.
LECT 3 hrs.
This course provides the student with a 200-hour internship at a local hospital. The student assists in the maintenance and calibration of biomedical electronic equipment. The student must abide by any rules and regulations stipulated in the affiliation agreement with the partnering hospital. As a minimum, the student is required to purchase liability insurance and agree to a criminal background check.
Prerequisites: ELT-200 and permission of department chair
Additional Fees: Course fee applies.

ELT-230. Optoelectronics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers principles of light and linear optics characteristics of electro-optical light sources and detectors and their applications in industry, displays and communication (fiber optics). Lab experiments demonstrate electro-optical measurements and designs of typical applications of electro-optical devices.
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ELT-231. Electronic Communication Systems. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers A.M., F.M., and single side-band communication systems, including an introduction to digital transmission. Designed to familiarize the student with transmitters, receivers, modems, noise analysis, information theory, pulse modulation, sampling, coding, multiplexing and other signal processing techniques used in commercial broadcasting and data transmission systems. The course includes some coverage of transmission lines, antennas, microwaves and satellites. Includes laboratory work involving communication system components and techniques using industrial grade equipment.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ELT-239. Cooperative Work Experience Electronics Engineering Technology. 3 Credits.
This course provides a field experience in the laboratory facilities of an industrial firm. The course is designed for students in the Electronics Engineering Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Students must have completed 35 credits to enroll.
Prerequisites: Permission of department chair.

ELT-291. Special Topics in Electronics Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ELT-292. Special Topics in Electronic Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ENR-103. Basic Engineering Graphics I. 1 Credit.
LAB 3 hrs.
Students learn fundamentals of engineering drawing through freehand sketching. Course includes developing orthographic views including auxiliary views, dimensioning, sectioning, tolerancing, threads, fasteners, springs and assembly drawings. Course includes creation of pictorial drawings.

ENR-117. Computer-Aided Drafting I. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is an introduction to the concepts and operation of engineering drawing preparation using CAD (computer-aided drafting). The emphasis is on how CAD can reduce drawing time and improve accuracy. Students learn to use the AutoCAD software program to prepare drawings.
Additional Fees: Course fee applies.

ENR-118. Computer-Aided Drafting II. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is a continuation and enhancement of Computer-Aided Drafting I. Topics include prototype drawings, blocks, attributes, x-reference, grips, paper space and development of 3-dimensional solid modeling.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-119. Technical Computer Applications. 1 Credit.
LAB 3 hrs.
This course provides an introduction to the various technical tools available to help solve problems in the field of engineering technology. This is a hands-on laboratory course designed to provide students with experience in using scientific calculators, Windows Operating System, Microsoft Office and Internet search tools. Special emphasis is placed on the development of technical reports using Microsoft Office's EXCEL and Word programs.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

ENR-120. Technical Computer Programming. 2 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an introduction to computer programming with application to engineering technology. Microcomputers are used to develop application programs in a programming language.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.
ENR-121. Engineering Graphics. 2 Credits.
LECT 1 hr., LAB 3 hrs.
This course is an introduction to computer aided design software and hardware. Covered are geometric constructions, multiview orthographic projection, dimensioning, sectioning, auxiliary view and axonometric projection and principles of descriptive geometry. A brief introduction to solid modeling is also included. This course is intended for Engineering Science students; Engineering Technology students take ENR-117.
Prerequisites: MAT-123
Additional Fees: Course fee applies.

ENR-123. Introduction to Engineering. 1 Credit.
LECT 1 hr.
This course provides the entering engineering student with an overview of the engineering profession and the design process. Topics discussed include the engineering course of study, academic advisement and transfer processes, types of engineering disciplines, problem-solving techniques, typical software tools, reporting techniques, and study skills.

ENR-124. Instrumentation and Measurements. 2 Credits.
LECT 1 hr., LAB 3 hrs.
This course is an introductory study in the concepts involving physical measurements utilizing hands-on electrical and mechanical measurement applications. Use of basic instruments and transducers, accuracy and precision, units and standards of measurements, accounting and presentation of errors in measurements.
Prerequisites: MAT-007 or equivalent
Corequisites: ENR-119
Additional Fees: Course fee applies.

ENR-125. Computer Programming for Engineers. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
A course in structured and object-oriented programming, emphasizing engineering applications and numerical methods in assignments. Program assignments are coded and are implemented on personal computers.
Prerequisites: MAT-123
Additional Fees: Course fee applies.

ENR-126. Computer Aided Design and Applications. 2 Credits.
LECT 1 hr., LAB 4 hrs.
An introductory course in computer aided design using parametric solid modeling software. Creation of solid models of parts, generation of orthographic views, sectional views and auxiliary views are covered. Dimensioning and tolerancing of parts is emphasized along with development of appropriate files to make the parts for product development using rapid prototyping (3-D printing) and to manufacture parts using computerized numerical control machines.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-220. Hydraulics and Fluid Power. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an exploration into the relationship between pressure, density and temperature as they relate to hydraulic and pneumatic systems. Topics include hydraulic pumps, motors and air compressors. The course emphasizes use of engineering standards and specifications for circuit design and component selection. Electrical controls and application to systems are covered. Lab sessions further expand upon lectures by providing students with physical evidence to support theories and ideas acquired in class.
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ENR-222. Mechanics of Solids. 3 Credits.
LECT 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending and combined stresses and column buckling. Also covered are axial force, shear moment and torque in structural members and in statically indeterminate systems. Elementary failure theory of structures and mechanical components is discussed.
Prerequisites: ENR-223.

ENR-223. Engineering Mechanics I (Statics). 3 Credits.
LECT 3 hrs.
This course is a vector approach to statics in a plane and in three dimensions, equilibrium of particles and rigid bodies. Equivalent force systems, structural analysis, centroids and moments of inertia. Virtual work and applied engineering problems are incorporated.
Prerequisites: MAT-131 and PHY-130.

ENR-224. Engineering Mechanics II (Dynamics). 3 Credits.
LECT 3 hrs.
This course is a calculus-based course in dynamics. Kinematics and kinetics of particles and rigid bodies, Newton's laws, work, energy, impulse and momentum are covered. Practical engineering problems are incorporated.
Prerequisites: ENR-223.

ENR-230. Engineering Strength of Materials. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending, and combined stresses and column buckling. Elementary failure theory of structures and mechanical components is discussed. Laboratory covers a variety of tensile stress-strain, impact and hardness tests, as well as shear stress-strain and the techniques of report writing.
Prerequisites: ENR-223
Additional Fees: Course fee applies.

ENR-232. Materials Science. 3 Credits.
LECT 3 hrs.
This course covers the properties and structure of materials: atomic bonding, molecular, crystalline, noncrystalline structures and crystalline imperfections. It also covers metallic phases, equilibrium and nonequilibrium reactions, processing and properties of ferrous and non-ferrous metals, polymers, ceramics and composites. In addition, corrosion phenomenon is discussed.
Prerequisites: CHM-125 and CHM-126 and PHY-130.
ENR-234. Independent Study in Technology. 3 Credits.
LECT 3 hrs.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress.
Prerequisites: Permission of department chair.

ENR-235. Engineering Circuit Analysis I. 3 Credits.
LECT 3 hrs.
This first course in engineering circuit analysis covers DC circuit analysis including source transformations, mesh, nodal, superposition, Thevenin and Norton theorems, and the maximum power transfer theorem. Dependent as well as independent sources are included. Transient response of RC, RL and RLC circuits is introduced. Steady-state analysis of single and three phase AC systems is studied using phasor diagrams and the network theorems mentioned above. Real, reactive, apparent power and power factors are included. Use of the computer as a problem-solving tool is included in the course.
Prerequisites: ENR-117

ENR-236. Engineering Circuit Analysis Laboratory I. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments in DC, AC and transients to accompany the course work in Engineering Circuit Analysis I.
Corequisites: ENR-235
Additional Fees: Course fee applies.

ENR-237. Engineering Circuit Analysis II. 3 Credits.
LECT 3 hrs.
This is a second course in engineering circuit analysis. Natural and step response of RL, RC and RLC circuits, mutual inductance, ideal transformers, series and parallel resonance are studied. Laplace transform theory is covered and includes step and impulse response in the S-domain. Bode diagrams of simple and quadratic factors are plotted and the computer is used for actual frequency and phase plots. Fourier Series are studied using both trigonometric and exponential forms.
Prerequisites: ENR-235
Corequisites: MAT-232.

ENR-238. Engineering Circuit Analysis Laboratory II. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments on transformers, series and parallel resonance, filters and frequency/phase response plots, and two-port hybrid models to accompany the course work in Engineering Circuit Analysis II.
Prerequisites: ENR-236
Corequisites: ENR-237
Additional Fees: Course fee applies.

ENR-240. Engineering Technology Project. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers the design of products and processes considering functional requirements, manufacturing feasibility and economy, and the use of technical literature and catalogs. Includes design layout and working drawings and group and individual projects.
Prerequisites: ENR-117 and MEC-110 and MEC-141
Additional Fees: Course fee applies.

ENR-241. Instrumentation and Control. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to the study of measuring systems and components, digital and analog signals and their characteristics. Mechanical and electromechanical transducer elements are used to measure pressure, temperature, displacement, velocity and acceleration. Static and dynamic performance of instruments, statistical analysis of experimental data are explored. A brief study of process controllers, programmable logic controllers and final control elements are also explored.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ENR-290. Special Topics in Technology. 1 Credit.
LECT 1 hr.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress when used for independent study. The course is also used to cover either current or future topics of interest in technology. Topics discussed will have relevance to either electronics technology, mechanical technology or both, and may vary each semester.
Prerequisites: Permission of department chair.

ENR-291. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ENR-292. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.
Engineering Science

Associate in Science Degree

The Engineering Science program challenges students to an academically rigorous preparation for transfer into baccalaureate programs offered by major engineering institutions. It emphasizes high-quality core courses in mathematics, science and engineering. An array of general education courses exposes students to the styles and interests of professionals in a variety of academic disciplines.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

For more information, visit the Engineering Science website (http://www.ccm.edu/academics/degrees/engineersci.aspx).

Degrees

AS Engineering Science

(P2180)

General Education Foundation

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Engineering Science Core

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Faculty

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Courses

ENR-103. Basic Engineering Graphics I. 1 Credit.
LAB 3 hrs.
Students learn fundamentals of engineering drawing through freehand sketching. Course includes developing orthographic views including auxiliary views, dimensioning, sectioning, tolerancing, threads, fasteners, springs and assembly drawings. Course includes creation of pictorial drawings.

ENR-117. Computer-Aided Drafting I. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is an introduction to the concepts and operation of engineering drawing preparation using CAD (computer-aided drafting). The emphasis is on how CAD can reduce drawing time and improve accuracy. Students learn to use the AutoCAD software program to prepare drawings.

Additional Fees: Course fee applies.

ENR-118. Computer-Aided Drafting II. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is a continuation and enhancement of Computer-Aided Drafting I. Topics include prototype drawings, blocks, attributes, x-reference, grips, paper space and development of 3-dimensional solid modeling.

Prerequisites: ENR-117
Additional Fees: Course fee applies.
ENR-119. Technical Computer Applications. 1 Credit. LAB 3 hrs. 
This course provides an introduction to the various technical tools available to help solve problems in the field of engineering technology. This is a hands-on laboratory course designed to provide students with experience in using scientific calculators, Windows Operating System, Microsoft Office and Internet search tools. Special emphasis is placed on the development of technical reports using Microsoft Office's EXCEL and Word programs. 
Prerequisites: MAT-007 or equivalent 
Additional Fees: Course fee applies. 

ENR-120. Technical Computer Programming. 2 Credits. LECT 2 hrs., LAB 2 hrs. 
This course is an introduction to computer programming with application to engineering technology. Microcomputers are used to develop application programs in a programming language. 
Prerequisites: MAT-007 or equivalent 
Additional Fees: Course fee applies. 

ENR-121. Engineering Graphics. 2 Credits. LECT 1 hr., LAB 3 hrs. 
This course is an introduction to computer aided design software and hardware. Covered are geometric constructions, multiview orthographic projection, dimensioning, sectioning, auxiliary view and axonometric projection and principles of descriptive geometry. A brief introduction to solid modeling is also included. This course is intended for Engineering Science students; Engineering Technology students take ENR-117. 
Prerequisites: MAT-123 
Additional Fees: Course fee applies. 

ENR-122. Mechanics of Solids. 3 Credits. 
Prerequisites: ENR-123. 
This course provides an introductory study in the concepts involving physical measurements utilizing hands-on electrical and mechanical measurement applications. Use of basic instruments and transducers, accuracy and precision, units and standards of measurements, accounting and presentation of errors in measurements. 
Prerequisites: MAT-007 or equivalent 
Corequisites: ENR-119 
Additional Fees: Course fee applies. 

ENR-123. Introduction to Engineering. 1 Credit. 
LECT 1 hr. 
This course provides the entering engineering student with an overview of the engineering profession and the design process. Topics discussed include the engineering course of study, academic advisement and transfer processes, types of engineering disciplines, problem-solving techniques, typical software tools, reporting techniques, and study skills. 

ENR-124. Instrumentation and Measurements. 2 Credits. LECT 1 hr., LAB 3 hrs. 
This course is an introductory study in the concepts involving physical measurements utilizing hands-on electrical and mechanical measurement applications. Use of basic instruments and transducers, accuracy and precision, units and standards of measurements, accounting and presentation of errors in measurements. 
Prerequisites: MAT-007 or equivalent 
Additional Fees: Course fee applies. 

ENR-125. Computer Programming for Engineers. 3 Credits. LECT 2 hrs., LAB 2 hrs. 
A course in structured and object-oriented programming, emphasizing engineering applications and numerical methods in assignments. Program assignments are coded and are implemented on personal computers. 
Prerequisites: MAT-123 
Additional Fees: Course fee applies. 

ENR-126. Computer Aided Design and Applications. 2 Credits. LECT 1 hr., LAB 4 hrs. 
An introductory course in computer aided design using parametric solid modeling software. Creation of solid models of parts, generation of orthographic views, sectional views and auxiliary views are covered. Dimensioning and tolerancing of parts is emphasized along with development of appropriate files to make the parts for product development using rapid prototyping (3-D printing) and to manufacture parts using computerized numerical control machines. 
Prerequisites: ENR-117 
Additional Fees: Course fee applies. 

ENR-220. Hydraulics and Fluid Power. 3 Credits. LECT 2 hrs., LAB 2 hrs. 
This course is an exploration into the relationship between pressure, density and temperature as they relate to hydraulic and pneumatic systems. Topics include hydraulic pumps, motors and air compressors. The course emphasizes use of engineering standards and specifications for circuit design and component selection. Electrical controls and application to systems are covered. Lab sessions further expand upon lectures by providing students with physical evidence to support theories and ideas acquired in class. 
Prerequisites: MAT-110 
Additional Fees: Course fee applies. 

ENR-221. Engineering Mechanics I (Statics). 3 Credits. LECT 3 hrs. 
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending and combined stresses and column buckling. Also covered are axial force, shear moment and torque in structural members and in statically indeterminate systems. Elementary failure theory of structures and mechanical components is discussed. 
Prerequisites: ENR-223. 

ENR-222. Mechanics of Solids. 3 Credits. 
Prerequisites: ENR-223. 
This course is a calculus-based course in dynamics. Kinematics and kinetics of particles and rigid bodies. Newton's laws, work, energy, impulse and momentum are covered. Practical engineering problems are incorporated. 
Prerequisites: ENR-222. 

This course is a vector approach to statics in a plane and in three dimensions, equilibrium of particles and rigid bodies. Equivalent force systems, structural analysis, centroids and moments of inertia. Virtual work and applied engineering problems are incorporated. 
Prerequisites: MAT-131 and PHY-130. 

ENR-224. Engineering Mechanics II (Dynamics). 3 Credits. LECT 3 hrs. 
This course is a calculus-based course in dynamics. Kinematics and kinetics of particles and rigid bodies. Newton's laws, work, energy, impulse and momentum are covered. Practical engineering problems are incorporated. 
Prerequisites: ENR-223. 

ENR-230. Engineering Strength of Materials. 4 Credits. LECT 3 hrs., LAB 3 hrs. 
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending, and combined stresses and column buckling. Elementary failure theory of structures and mechanical components is discussed. Laboratory covers a variety of tensile stress-strain, impact and hardness tests, as well as shear stress-strain and the techniques of report writing. 
Prerequisites: ENR-223 
Additional Fees: Course fee applies.
ENR-232. Materials Science. 3 Credits.
LECT 3 hrs.
This course covers the properties and structure of materials: atomic bonding, molecular, crystalline, noncrystalline structures and crystalline imperfections. It also covers metallic phases, equilibrium and nonequilibrium reactions, processing and properties of ferrous and non-ferrous metals, polymers, ceramics and composites. In addition, corrosion phenomenon is discussed.
Prerequisites: CHM-125 and CHM-126 and PHY-130.

ENR-234. Independent Study in Technology. 3 Credits.
LECT 3 hrs.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress.
Prerequisites: Permission of department chair.

ENR-235. Engineering Circuit Analysis I. 3 Credits.
LECT 3 hrs.
This first course in engineering circuit analysis covers DC circuit analysis including source transformations, mesh, nodal, superposition, Thevenin and Norton theorems, and the maximum power transfer theorem. Dependent as well as independent sources are included. Transient response of RC, RL and RLC circuits is introduced. Steady-state analysis of single and three phase AC systems is studied using phasor diagrams and the network theorems mentioned above. Real, reactive, apparent power and power factors are included. Use of the computer as a problem-solving tool is included in the course.
Prerequisites: MAT-132.

ENR-236. Engineering Circuit Analysis Laboratory I. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments in DC, AC and transients to accompany the course work in Engineering Circuit Analysis I.
Corequisites: ENR-235
Additional Fees: Course fee applies.

ENR-237. Engineering Circuit Analysis II. 3 Credits.
LECT 3 hrs.
This is a second course in engineering circuit analysis. Natural and step response of RL, RC and RLC circuits, mutual inductance, ideal transformers, series and parallel resonance are studied. Laplace transform theory is covered and includes step and impulse response in the S-domain. Bode diagrams of simple and quadratic factors are plotted and the computer is used for actual frequency and phase plots. Fourier Series are studied using both trigonometric and exponential forms.
Prerequisites: ENR-235
Corequisites: MAT-232.

ENR-238. Engineering Circuit Analysis Laboratory II. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments on transformers, series and parallel resonance, filters and frequency/phase response plots, and two-port hybrid models to accompany the course work in Engineering Circuit Analysis II.
Prerequisites: ENR-236
Corequisites: ENR-237
Additional Fees: Course fee applies.

ENR-240. Engineering Technology Project. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers the design of products and processes considering functional requirements, manufacturing feasibility and economy, and the use of technical literature and catalogs. Includes design layout and working drawings and group and individual projects.
Prerequisites: ENR-117 and MEC-110 and MEC-141
Additional Fees: Course fee applies.

ENR-241. Instrumentation and Control. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to the study of measuring systems and components, digital and analog signals and their characteristics. Mechanical and electromechanical transducer elements are used to measure pressure, temperature, displacement, velocity and acceleration. Static and dynamic performance of instruments, statistical analysis of experimental data are explored. A brief study of process controllers, programmable logic controllers and final control elements are also explored.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ENR-290. Special Topics in Technology. 1 Credit.
LECT 1 hr.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress when used for independent study. The course is also used to cover either current or future topics of interest in technology. Topics discussed will have relevance to either electronics technology, mechanical technology or both, and may vary each semester.
Prerequisites: Permission of department chair.

ENR-291. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ENR-292. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.
English for Speakers of Other Languages (ESL)

(P0961)

This program of study is designed for students whose native language is not English but who already have some fundamental knowledge of the language as determined by a placement examination. The curriculum provides students with the academic English skills and cultural knowledge needed for college studies. Upon successful completion of the program, students go into the appropriate course in the English department to fulfill the Communication requirement of their major. Students are not permitted to enroll in other courses in their major until they successfully complete Level II. For more details, consult the chart below, or visit the Languages and ESL Department webpage. (http://www.ccm.edu/academics/divdep/liberalarts/languages)

Level I

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<td>ESL-021</td>
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Level III

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¹ Note: ESL-040 ESL Writing Review is a brief restricted course that is scheduled three times a year upon the conclusion of the current semester. Students are placed in this course according to the final score they receive in ESL-033 Writing III

Courses

ESL-010. ESL Reading I. 4 Credits.
LECT 4 hrs.
This course introduces ESL students the basic reading skills and academic vocabulary needed to manage college-level texts. The texts examine aspects of American culture with an emphasis on the college experience. Students are expected to respond to texts with discussions and writing.
Prerequisites: Appropriate placement test scores.

ESL-017. ESL Writing I. 8 Credits.
LECT 8 hrs.
This course introduces students to basic grammar, sentence structure, vocabulary and American English writing conventions with emphasis on the paragraph. Listening comprehension, speaking, reading and writing are reinforced and practiced.
Prerequisites: Appropriate placement test scores.

ESL-019. ESL Reading II. 4 Credits.
LECT 4 hrs.
This course furthers the reading skills introduced in ESL Reading I. The course texts enhance cultural awareness and prepare ESL students to comprehend college-level texts in English. Students also continue to develop their academic vocabulary.
Prerequisites: ESL-010 or appropriate placement test scores.

ESL-020. ESL Writing II. 8 Credits.
LECT 8 hrs.
This course expands the grammatical and writing skills introduced in Writing I. It presents narrative and descriptive short compositions and more complex sentence structure and grammar. Grammar topics include major tenses, gerunds, infinitives, passives, relative clauses, modals and noun clauses.
Prerequisites: ESL-017 or appropriate placement test scores.

ESL-021. Conversational English. 3 Credits.
LECT 3 hrs.
This course provides ESL students with the basis for effective verbal communication in the academic setting. Students learn American English pronunciation, basic presentation skills and idiomatic expressions to prepare for participation in the college classroom.
Prerequisites: Appropriate placement test scores.
ESL-022. Advanced Conversational English. 3 Credits.
LECT 3 hrs.
This course furthers the skills introduced in Conversational English. Students learn grammar, idioms which focus on classroom communication, and American English pronunciation to advance their presentation skills.
Prerequisites: ESL-021 or appropriate placement test scores.

ESL-033. Writing III. 6 Credits.
LECT 6 hrs.
This course advances students' academic writing skills in English by refining essay structure for narrative and descriptive essays and improving knowledge and use of standard English grammar rules, mechanics and punctuation. Topics include major tenses, gerunds, infinitives, passives, articles, sentence structure, parallelism, subject-verb agreement, commas and apostrophes. Students who pass ESL-033 exit the ESL program.
Prerequisites: ESL-020 or appropriate placement test score.

ESL-040. ESL Writing Review. 1 Credit.
LECT 1 hr.
This is an intensive review course for ESL-033 students who need to strengthen their academic English skills before exiting the ESL program. The course focuses on problematic areas of English language usage and helps students to remedy deficiencies in these areas. Students are placed in this course upon the recommendation of the ESL-033 instructor and with permission of the department chair. Recommendations are based on diligence and fulfillment of course requirements.
Prerequisites: ESL-033 and permission of department chair.
Exercise Science

Associate in Science Degree

This program prepares students to transfer to baccalaureate programs in Exercise Science, Exercise Physiology, Adult Fitness, Personal Training, Physical Therapy, Cardiac Rehabilitation, Kinesiology, Athletic Training, Physical Education and similar curricula. Graduates of such baccalaureate programs find employment in health and wellness management, health center and fitness center program management, corporate health and wellness programs, health and physical education teaching, exercise physiology teaching and research, medical exercise rehabilitation programs, adult fitness programs and related fields. The curriculum includes general education requirements, a basic science and math foundation and a broad base in discipline-related courses such as exercise physiology, nutrition, kinesiology and exercise measurement and prescription.

If you are considering a career in Health/Physical Education teaching, please read about the County College of Morris Teacher Education Specialization in Health/Physical Education (p. 204).

For more information, visit the Exercise Science website (http://www.ccm.edu/academics/degrees/exercisesci.aspx).

Degrees

AS Exercise Science

(P2960)

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Laboratory Science Restricted Elective

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| PSY-113 General Psychology | |
| Humanities            | 3 |
| Choose from General Education course list | |
| General Education Electives | 9 |
| COM-109 Speech Fundamentals | 3 |
| Electives             | |

General Education Foundation Credits 34

Exercise Science Core

| HES-111 Introduction to Exercise Science | 3 |
| BIO-101 Anatomy and Physiology I | 4 |
| BIO-102 Anatomy and Physiology II | 4 |
| HES-211 Kinesiology | 3 |
| HED-295 First Aid and Emergency Care | 3 |
| HED-283 Cardiopulmonary Resuscitation | 1 |
| HES-212 Exercise Physiology | 3 |
| HED-115 Personal and Family Nutrition | 3 |

HED-286 Personal Health & Wellness 3
HES-213 Exercise Measurement and Prescription 3
Exercise Science Restricted Electives 2
Exercise Science Core Credits 32

Total Credits 66

Faculty

Denise Vill’Neuve, R.T. (R) (CT) (M)  
Chairperson, Allied Health, and Health and Exercise Science  
Professor, Radiography Program  
M.A., B.S., Montclair State University  
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M.S., East Stroudsburg University  
B.A., Rutgers University  
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Courses

HED-112. Drugs, Society and Human Behavior. 3 Credits. LECT 3 hrs.  
This course examines the effects drugs have on the individual and society, taking a critical look at the most recent scientific data drawn from medical, sociological and student research. Topics include, but are not limited to, neurophysiology, pharmacology and the demographics of drug use, legal issues, and treatment and prevention programs. Different types of drugs are examined.  
Additional Fees: Course fee applies.

HED-115. Personal and Family Nutrition. 3 Credits. LECT 3 hrs.  
In this course, students study the relationships of nutrition and eating patterns to one’s health, nutritive value and composition of foods, metabolism, functions and requirements of nutrients throughout life, and essentials of an adequate diet. Emphasis is placed on the practical application of nutrition concepts in everyday life.  
Additional Fees: Course fee applies.
HED-128. Lifetime Wellness. 2 Credits.
LECT 1 hr., LAB 2 hrs.
This course is designed to provide students with the knowledge and skills necessary to make intelligent decisions about health and wellness. Topics include nutrition and weight management, substance abuse, stress management, fitness, cardiovascular disease and sexually transmitted diseases. Students engage in personally selected programs to improve wellness.
Additional Fees: Course fee applies.

HED-130. Mind-Body Health. 3 Credits.
LECT 3 hrs.
This course explores the relationship between the mind and the body. Emphasis is placed on relaxation, meditation, and yoga to enable students to reach a state of peace, calmness and self-awareness. Students explore the integration of the entire self in order to achieve an understanding and an awareness of their own selves and take control of their wellness.
Additional Fees: Course fee applies.

HED-132. Stress Management. 1 Credit.
LECT 1 hr.
This course provides students with an understanding of the basic principles of the stress response, the General Adaptation Syndrome, stressors and stress management. Students participate in physical and cognitive exercises designed to reduce stress.
Additional Fees: Course fee applies.

HED-133. Weight Management. 1 Credit.
LECT 1 hr.
This course covers information about lifetime weight management. The role of diet, exercise, behavior modification and stress management and their relationship to weight management are emphasized. Students analyze diets, set goals and apply a weight management program to themselves throughout the course.

HED-283. Cardiopulmonary Resuscitation. 1 Credit.
LAB 2 hrs.
This course is taught according to American Heart Association (AHA) guidelines. Students learn about heart disease prevention, early recognition of heart attack and stroke, early access to Emergency Medical Services, and recognition and treatment for respiratory arrest, cardiac arrest and obstructed airway emergencies. Students who successfully complete the requirements will receive an AHA CPR card (BLS for Healthcare Provider CPR). This course is available through the Division of Corporate and Community Programs. Students enrolled in the majors of Nursing, Radiography, Respiratory Therapy, Exercise Science, and Early Childhood Education may request that they receive 1 credit toward their HED/HES requirement. Students must present a valid American Heart Association CPR card (BLS for Healthcare Provider CPR) to the Office of Records and Registration to receive credit. Course fees do not represent income to the AHA or any of its components.
Additional Fees: Course fee applies.

HED-286. Personal Health and Wellness. 3 Credits.
LECT 3 hrs.
This course examines current health and wellness topics that have an impact on the individual in today’s society. Emphasis is on a wellness approach, examining the physical, emotional, intellectual, social and spiritual dimensions of health. Students engage in evaluations of their own wellness behaviors and investigate in detail at least one health issue of personal significance. (There is no substitution for this course in programs that require it for degree completion.)
Additional Fees: Course fee applies.

HED-293. Special Topics in Health Education. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Health Education. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A three-credit introductory course in Health Education.

HED-294. Special Topics in Health Education. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Health Education. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A three-credit introductory course in Health Education.

HED-295. First Aid and Emergency Care. 3 Credits.
LECT 3 hrs.
A basic course in first aid which acquaints students with information about prevention of accident and injury and about emergency assessment, recognition and treatment of trauma and sudden illnesses. Upon successful completion of the requirements, the student will receive First Aid certification.
Additional Fees: Course fee applies.

HES-104. Foundations of Personal Training. 3 Credits.
LECT 3 hrs.
This comprehensive class is ideal for anyone preparing for the ACSM, NASM or ACE Personal Trainer exam and those who want to pursue a career in personal training. Course content includes anatomy, applied exercise science, kinesiology, professional roles and responsibilities. ACSM course curriculum is followed. Open to Personal Trainer Certificate of Achievement (Curriculum 0950) students only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

HES-106. Personal Trainer Field Experience. 1 Credit.
LECT 1 hr.
This course provides Personal Trainer Certificate of Achievement students with the opportunity to work with clients in the field. Students are linked with professionals in health clubs and commercial and corporate fitness centers who mentor their progress. Arrangements for this field experience must be coordinated through the field experience instructor. Students must accomplish a minimum of 40 hours in one semester in their field experience and write a report of the experience.
Prerequisites: HES-104, open to Personal Trainer Certificate of Achievement students only.
HES-107. Program Design and Implementation. 3 Credits.
LECT 3 hrs.
This course provides students with the practical application of current testing procedures and instrumentation used in exercise testing. Students learn to perform and interpret the basic measurement protocols for cardiorespiratory endurance, muscular strength and endurance, flexibility, body composition, and blood pressure. Students learn the principles related to exercise prescription, develop the necessary skills to design and implement training programs as they relate to the components of fitness. Safeguards and effectiveness for all fitness levels are addressed.
Prerequisites: HES-104, open to Personal Trainer Certificate of Achievement students only
Additional Fees: Course fee applies.

HES-111. Introduction to Exercise Science. 3 Credits.
LECT 3 hrs.
This course is recommended in the first semester. This is an introductory course to acquaint students with the development and structure of the field of exercise science. The current scientific development of the field is stressed, with emphasis on basic exercise physiology, health and fitness. There is a 20-hour internship requirement for this course. Open to Exercise Science majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

HES-121. Aerobic Exercise. 1 Credit.
LAB 2 hrs.
This course provides the student with the underlying principles of cardiovascular fitness and an opportunity to participate in aerobic activities designed to improve cardiovascular fitness, firm muscles, reduce fat and cope with stress.
Additional Fees: Course fee applies.

HES-125. Stretching and Strengthening. 1 Credit.
LAB 2 hrs.
This course provides a thorough presentation of exercises for improving strength and flexibility without the need for special equipment. Emphasis is on exercising safely and learning the importance of strength and flexibility in conditioning, injury prevention and rehabilitation. It is designed to give students the tools with which to create a personal exercise program. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.

HES-126. Personal Fitness. 1 Credit.
LAB 2 hrs.
Students design and practice an exercise program that develops selected components of physical fitness. Each student undertakes assessments of various components of fitness.
Additional Fees: Course fee applies.

HES-127. Weight Training. 1 Credit.
LAB 2 hrs.
Basic principles of resistance (weight) training are taught, emphasizing training for general conditioning. Training programs for major muscle groups are developed and practiced. Equipment used includes free weights and some machines.
Additional Fees: Course fee applies.

HES-128. Yoga. 1 Credit.
LAB 2 hrs.
This is an introductory course in yoga covering basic hatha yoga postures and exercises. Breathing techniques, flexibility and muscular endurance are enhanced. The course helps relieve stress and develop a sense of peacefulness and tranquility while improving fitness. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.

HES-129. Self-Defense. 1 Credit.
LAB 2 hrs.
This course provides students with the knowledge and skills to judge potential threats and react swiftly to defend themselves. Social and psychological effects of violence are discussed, along with legal issues of self defense. The basic techniques of Tae Kwon-Do, Ju-Jitsu and Aikido are introduced for everyday usage. A martial arts attitude is developed.
Additional Fees: Course fee applies.

HES-130. Tai Chi. 1 Credit.
LAB 2 hrs.
Tai Chi is a low-impact form of oriental exercise that increases energy, balance and overall health. Total mind-body interaction is emphasized. This course is a gentle means to contribute to overall health and fitness.
Additional Fees: Course fee applies.

HES-131. Pilates. 1 Credit.
LAB 2 hrs.
Pilates is a form of exercise that conditions the muscles through specific strength exercises without creating bulk. Based on the system introduced by Joseph Pilates over 70 years ago, exercises are done on both the mat and machines. Emphasis is on the core strength and flexibility of the abdomen and back, as well as other major body areas. Pilates is an exercise system that also concentrates on mind-body connection and correct postural alignment to gain optimal health and fitness. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.

HES-141. Personal Challenge I. 1 Credit.
LAB 2 hrs.
This activity course focuses on the importance of reaching beyond the individual and utilizing group resources to solve problems through trust, teamwork, communications, self-esteem building, group problem-solving skills, decision making and fun. Students execute safely a series of adventure activities involving wall climbing, rope hanging, game playing and cable walking in order to enable the group to cross real and imaginary boundaries. All activities are individualized so that any student may successfully participate. Taught off-campus.
Additional Fees: Course fee applies.

HES-161. Aquatic Fitness. 1 Credit.
LAB 2 hrs.
This is an exercise course in the pool designed for the student who wants an alternative to land exercise. The course provides the skills and knowledge to develop an overall aquatic workout to suit individual needs, especially for those who may require non-weight-bearing exercise.
Additional Fees: Course fee applies.
HES-162. Basic Swimming. 1 Credit.
LAB 2 hrs.
This course is designed for the non-swimmer or beginner swimmer who has had little or no instructional experience and who may feel uncomfortable in the water. Through this course, one gains basic swimming and diving skills progressing from shallow to deepwater swimming. The National American Red Cross Swimming Levels I-III is covered.
Additional Fees: Course fee applies.

HES-182. Golf I. 1 Credit.
LAB 2 hrs.
A beginner's study and practice of the fundamental skills and basic rules of the game of golf. Topics include the make-up of the course, the grip, swing and stance, the equipment, and the rules. A portion of the course is held off campus at local golf facilities.

HES-184. Tennis. 1 Credit.
LAB 2 hrs.
An introductory course which covers the basic strokes, strategy and rules of the game of tennis. Emphasis is placed on the instruction, practice and utilization of skills and rules in actual match situations. Students must supply their own tennis rackets and balls.
Additional Fees: Course fee applies.

HES-186. Badminton. 1 Credit.
LAB 2 hrs.
A beginning course which introduces the student to the basic strokes, rules and fundamental strategies of the game of badminton. Emphasis is placed on the utilization of newly acquired skills in game situations.
Additional Fees: Course fee applies.

HES-187. Volleyball. 1 Credit.
LAB 2 hrs.
This course develops techniques, skills and strategies of volleyball. Emphasis is on the development of the basic skills essential for success and enjoyment.

HES-211. Kinesiology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course emphasizes the analysis of the principles of movement through human anatomical design. Major joints of the body, their actions and the muscles that do those actions are stressed. Application to physical exercise is stressed in lab work on strength, endurance and potential motion of major joints.
Prerequisites: BIO-101
Additional Fees: Course fee applies.

HES-212. Exercise Physiology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course includes the study of human responses and adaptations to exercise of varying levels of stress and intensity. Major topics include bioenergetics, the physiology of the circulatory, respiratory, muscular and nervous systems as they apply to exercise, and the underlying physiological basis of fitness. Laboratory experiences illustrate practical application of theoretical content with hands-on experiences to measure and apply what is learned in the lecture component of the course.
Prerequisites: BIO-101, BIO-102 and HES-111, open to Exercise Science majors only
Additional Fees: Course fee applies.

HES-213. Exercise Measurement and Prescription. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course stresses the appropriate measurement of various aspects of human exercise. Measurement of body composition, cardiovascular efficiency, muscular strength and endurance and other physiological parameters are taught and practiced. Students learn how to develop individualized and properly designed exercise prescriptions for adults, including special populations.
Prerequisites: HES-212 (minimum grade of C) Open to Exercise Science majors only
Additional Fees: Course fee applies.

HES-291. Special Topics in Exercise Science. 1 Credit.
LAB 2 hrs.
An examination of selected topics or issues in Exercise Science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Exercise Science.

HES-292. Special Topics in Exercise Science. 1 Credit.
LAB 2 hrs.
An examination of selected topics or issues in Exercise Science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: HES-111.
Fire Science Technology

Associate in Applied Science Degree

This program is for individuals interested in such public sector careers as municipal firefighters, fire inspectors, fire investigators, fire technicians and fire protection engineers. Opportunities in the private sector include industrial firefighters, fire protection specialists, fire protection engineers, fire investigators and loss control consultants. Potential employers for graduates of this program would be governmental agencies, private industry, fire equipment manufacturers and vendors, and the insurance industry.

Graduates are expected to:

• Have a working understanding of the field of Fire Science
• Understand fire safety codes, code enforcement and effective inspection
• Identify fire pattern, cause, origins and arson
• Understand and evaluate the organization and management of fire service systems
• Develop skills in using the most advanced fire science technology

This is a joint offering with Passaic County Community College (PCCC). The technical core of the Fire Science curriculum is offered by PCCC to County College of Morris (CCM) students as online courses or via the college’s Inter-Active Television (ITV) system. CCM students can choose to travel to PCCC’s state-of-the-art facility in Passaic County Public Safety Academy in Wayne. The remaining courses are offered through CCM.

For more information, visit the Fire Science website (http://www.ccm.edu/academics/degrees/firesci.aspx).

1 Courses with FST designation.

Degrees

AAS Fire Science Technology

(P3460)

General Education Foundation

<table>
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<td>ENG-112 English Composition II</td>
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<td>PSY-113 General Psychology</td>
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General Education Foundation Credits 21-22

Fire Science Technology Core

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<tr>
<td>FST-101 Introduction to Fire Science</td>
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<td>FST-102 Fire Prevention and Related Codes</td>
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Faculty

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M.A., Seton Hall University
B.A., CUNY John Jay College of Criminal Justice
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Courses

FST-101. Introduction to Fire Science. 3 Credits.
LECT 3 hrs.
This class is considered to be the foundation course for all students of Fire Science Technology. Students are introduced to the concept of the systems approach to fire protection by presenting the components of modern fire department responsibility including emergency incident management, public education, training, resource management and customer service. Students who have completed their Fire Fighter 1 will receive credit for this course.

FST-102. Fire Prevention and Related Codes. 3 Credits.
LECT 3 hrs.
This course provides students with basic knowledge of federal, state and local codes related to building construction, fire and life safety requirements, and other codes. Includes New Jersey state fire safety regulations and related state requirements. National Fire Protection Association (NFPA) and other standards related to fire protection and life safety are examined. Students who have completed their Fire Fighter 1 will receive credit for this course.

FST-103. Fire Fighting Tactics and Strategy. 3 Credits.
LECT 3 hrs.
Analysis of the basic rules of fire fighting strategy, defining engine company responsibilities, defining ladder company functions, correlating mutual aid fires and general fire problems. Studies the effective management of suppression forces at various fire situations. Includes consideration of pre-fire planning, problem identification and solution implementation.
FST-106. Fire Protection Systems. 3 Credits.
LECT 3 hrs.
A study of the nature of public and private fire protection with an emphasis on analysis of systems of fire detection, fire alarm, fire communications, water distribution networks, fire service, hydraulics and fire suppression.
Prerequisites: Permission of department chair.

FST-107. Fire Apparatus Specifications, Inspections and Maintenance. 3 Credits.
LECT 3 hrs.
This course covers the principles of care, maintenance and operation of fire apparatus and pumps. Includes pump construction and accessories, pumping techniques, power development and transmission. Also includes driving, troubleshooting and producing effective fire streams.

FST-201. Fire Service Management. 3 Credits.
LECT 3 hrs.
This course introduces the student to the principles of personnel management through the use of effective leadership techniques. Topics include overview of the fire service as an organization and the officer’s role in it, interpersonal communications, personality typing, skill development, leadership techniques, group dynamics and principles of fire company management.
Prerequisites: FST-101 or equivalent.

FST-202. Hazardous Materials. 3 Credits.
LECT 3 hrs.
A comprehensive study of the physical, chemical and toxicological characteristics of hazardous materials. This course includes basic methods of recognition and identification based upon the chemical and physical properties of hazardous materials, basic safety procedures when utilizing specific types of protective clothing and equipment, and basic tactical information relating to scene management.
Prerequisites: MAT-007 or passing score on the algebra section of the placement test.

FST-204. Fire Protection, Building Construction. 3 Credits.
LECT 3 hrs.
This course introduces basic construction principles and the special characteristics of wood and ordinary construction as they concern the fire service. Primary emphasis is on improving the fire officer’s ability to ensure firefighter safety by recognizing common causes and indicators of failure and other hazards relating to building construction. Course material enables the fire officer to better predict the overall reaction of a building to fire conditions.

FST-205. Fire Investigation. 3 Credits.
LECT 3 hrs.
An in-depth course that defines successful methods for conducting fire investigations. Specific topics include basic chemistry of fire, point of origin, fire cause (both accidental and incendiary), motivation of the fire setter, fire scene investigations, evidence collection, photography, follow-up investigation and court testimony.

FST-206. Fire Hydraulics. 3 Credits.
LECT 3 hrs.
This course is a concentrated study in the application of mathematics and physics to the properties of water as used in fire suppression operations. Classic hydraulics formulas are used to solve problems for flow velocity, nozzle reaction, friction loss, water distribution systems, fire flow testing, fire service pumps and fire ground hose evolutions.
Prerequisites: MAT-007 or passing score on the algebra section of the placement test.

FST-207. Emergency Medical Technician. 6 Credits.
LECT 4 hrs., LAB 4 hrs.
This course is designed to prepare the basic Emergency Medical Technician in accordance with the United States Department of Transportation curriculum and the New Jersey Department of Health guidelines. This course covers an introductory survey of emergency medical services including medical, legal/ethical aspects, role of the Emergency Medical Technician, patient assessment, care of wounds and fractures, airway maintenance, medical and environmental emergencies, patient transportation, emergency childbirth and basic extrication. After completion of this course, the student will be eligible to take the National Registry Examination for certification as an Emergency Medical Technician-Basic. Students who are already registered EMT-Basic in New Jersey will be given credit for this course.

FST-210. Current Issues in Fire Science/ Capstone Experience. 3 Credits.
LECT 3 hrs.
A review of the current problems affecting the fire service with particular emphasis on resource allocation, planning and fiscal constraints. The capstone experience requires the student to author and present a scholarly research paper on a topic covered in this course. Students must have completed 40 credit hours in the Fire Science Curriculum or have permission of department chair.
Prerequisites: Permission of department chair.
Graphic Design
Associate in Applied Science Degree

The Graphic Design program prepares students for entry-level positions as graphic designers, production artists, junior art directors, web production artists, website designers and other entry-level interactive media positions.

Majors can also graduate and transfer to a four-year college, university or art school with a portfolio that makes a difference. Students get a personal portfolio review at least twice before graduation. Graphic design courses include constantly advancing technology. Students learn creative problem solving, critical thinking, presentation skills, computer skills and get a real-world experience. Students take foundation courses in art and graphic design and select electives in advertising, magazine production, web-page design, animation, video, television graphics, digital photography, illustration, interior design and more.

Articulation Agreements
Students should check with the Transfer Office about articulation agreements with this program.

For more information, visit the Graphic Design website. (http://www.ccm.edu/academics/degrees/graphicdesign.aspx)

Degrees

AAS Graphic Design
(P3560)

General Education Foundation

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<th>Course Code</th>
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<td>ENG-111</td>
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<td>ENG-112</td>
<td>English Composition II</td>
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<td>Laboratory Science (4 CR for transfer students)</td>
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<td>Science (3 CR for transfer students)</td>
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<td>Technology (0/1 CR)</td>
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Social Science or Humanities 3

Choose from General Education course list 3

General Education Electives 6

ART-133 Art History I 3
ART-134 Art History II 3

General Education Foundation Credits 22-24

Visual Arts Core

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<td>GRD-110</td>
<td>History of Graphic Design (Required)</td>
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<td>ART-122</td>
<td>Drawing I</td>
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<td>ART-130</td>
<td>Two Dimensional Design</td>
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<td>PHO-115</td>
<td>Photography I</td>
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<td>GRD-120</td>
<td>Graphic Design I</td>
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<td>GRD-220</td>
<td>Graphic Design II</td>
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<td>GRD-111</td>
<td>Introduction to Computer Graphics</td>
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<td>GRD-116</td>
<td>Electronic Prepress</td>
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<td>GRD-118</td>
<td>Typography</td>
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<td>GRD-218</td>
<td>Typography II</td>
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<tr>
<td>GRD-227</td>
<td>Portfolio Project</td>
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<td>GRD-250</td>
<td>Brochure and Magazine Design</td>
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<td>GRD-260</td>
<td>Branding for Graphic Designer</td>
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<td>Visual Arts Core Credits</td>
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Total Credits 64-66

Faculty

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BFA, Kent State University
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Courses

GRD-110. History of Graphic Design. 3 Credits.
LECT 3 hrs.
This is a lecture course that provides an overview of major graphic design movements and design styles. The focus is on important design innovations and breakthrough technologies. The student is introduced to graphic design masters and masterpieces and is familiarized with major design studios and advertising agencies. A classic foundational textbook is required reading which is supported by slide presentations, videos, websites and trade articles.
Prerequisites: Placement basis or ENG-025 or equivalent.

GRD-111. Introduction to Computer Graphics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Instruction focuses on the use of the computer as a visual tool and the emphasis is on creative visual input. An overview of various graphic design programs such as illustration, scanning and page layout supports the creation of two-dimensional design as it applies to printed material.
Prerequisites: ART-122, ART-130, ENG-025, MAT-011 or MED-114 and ART-130
Additional Fees: Course fee applies.

GRD-116. Electronic Prepress. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides the student with the basic vocabulary and fundamental understanding of the techniques and processes involved in both traditional mechanical layout and the contemporary counterpart of electronic prepress preparation for printed material. Students manipulate the elements of typography, photography, illustration and text to create camera-ready art and electronically ready art and finished traditional and electronic mechanicals. Field trips to a printing facility and/or service bureau may be included.
Prerequisites: ART-122, ART-130, GRD-111, GRD-118
Additional Fees: Course fee applies.
GRD-116. Typography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Emphasis is based on developing a typographic vocabulary, identifying and recognizing type fonts and exploring type as design elements. Students engage in the skills of hand lettering and compositional layout while addressing letter proportion, anatomy, structure and typographic space. Communication problems emphasize typography as the primary design focus.
Prerequisites: ART-122, ART-130, ENG-025, MAT-011 or MED-114 and ART-130
Additional Fees: Course fee applies.

GRD-120. Graphic Design I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course introduces professional creative problem solving in graphic design. Emphasis is based on the fundamentals of critical thinking, the critique process and effectively integrating concepts with the principles of design. Students engage in visual research, thumbnail sketching and refining rough process sketches by hand. The use of art and design to meet the communication needs of business and industry are explored.
Prerequisites: ART-122, ART-130, ENG-025, MAT-011
Additional Fees: Course fee applies.

GRD-227. Portfolio Project. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an examination and application of a variety of methods for assembling and presenting graphic art and design in a professional manner. This course focuses on portfolio preparation, presentation and interview procedures. Formal and informal critiques assist the student in defining strengths and career goals.
Prerequisites: Scheduled during the final semester and permission of designated Graphic Design faculty.

GRD-229. Cooperative Work Experience-Related Clas. 1 Credit.
LECT 1 hr.
A related class designed to supplement work experience. Weekly meetings include readings, discussions, written assignments and critical analysis of the work experience.
Prerequisites: GRD-111, GRD-116, GRD-118, GRD-120, GRD-220 and permission of designated Graphic Design faculty
Corequisites: GRD-232.

GRD-230. Computer Assisted Illustration. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A continuation of the study of commercial illustration techniques with the integration of typography. Students explore computer color illustration and image manipulation, and work with scanned photography, digitized illustrations, laser and inkjet prints. Students execute product and editorial illustrations with an emphasis on combining fine art and graphic art processes to create sophisticated portfolio projects.
Prerequisites: GRD-111, GRD-118, GRD-120
Additional Fees: Course fee applies.

GRD-232. Graphic Design Internship/Cooperative Work Experience. 3 Credits.
LECT 3 hrs.
Practical work experience within the realm of graphic design and advertising. Students perform work for cooperating employers in advertising agencies, graphic design studios or corporate art departments. Practical work experience may include design assignments at printing facilities or other communication-based businesses.
Prerequisites: GRD-111, GRD-116, GRD-118, GRD-120, GRD-220
A minimum 2.5 GPA and portfolio review with permission by designated Graphic Design faculty is required
Corequisites: GRD-229.

GRD-240. Computer Assisted Page and Cover Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This is an intermediate lecture/studio course designed to further develop skills in publication design with the goal of designing the Promethean literary and arts magazine. In the professional environment of a publication design studio format, students work as a creative team of editors, designers and proofreaders to develop the Promethean from concept to final production, under a specialist’s supervision. Lecture topics include organizational planning, purpose, content, typeface selection, illustration/photography, paper stock, bindings, covers and management skills. Utilizing current industry software, students have the opportunity to design and produce a finished professional in-house publication for the college and their portfolio. Graphic design issues, historical, cultural and technical, are addressed.
Prerequisites: Permission of designated Graphic Design faculty
Additional Fees: Course fee applies.
GRD-250. Brochure and Magazine Design. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course trains the person familiar with traditional layout procedures. It stresses transferring manual board skills to the electronic screen. Brochures, magazines, web pages, newspaper pages and a variety of other print materials are practiced. This course examines theory, styles, trends and the mechanics of cover and page design to create portfolio projects. 
Prerequisites: GRD-111, GRD-118, GRD-120
Additional Fees: Course fee applies.

GRD-255. Advertising Design. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course is designed to further develop hands-on skills in concept and design with the goal of creating an advertising campaign. In the professional environment of an ad agency format, students work as a creative team of art director and writer to research and develop the ad, radio and TV commercial from concept to final production, under a specialist's supervision. Lecture topics include organizational planning, purpose, content, casting production techniques, illustration/photography supervision, as well as management skills, all stressed while the creative execution of the advertising takes place. Assignments consist of print ads, TV commercials, sales promotion, packaging, posters, billboards and web design. Utilizing current standard industry principles, students have the opportunity to design and produce a finished professional product for their portfolio. Advertising issues, historical, cultural and technical, are addressed. A tour of a Manhattan ad agency might be included.
Prerequisites: GRD-111, GRD-118, GRD-120 and permission of designated Graphic Design faculty
Additional Fees: Course fee applies.

GRD-260. Branding for Graphic Designers. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course will be approached from a graphic design page layout perspective using current software. Students apply critical thinking and the principles learned in graphic design to arrive at a well-designed brand identity and presence that works within the overall semiotic branding experience. Branding issues, design aesthetics, cultural and technical applications are addressed to meet the needs of today's markets.
Prerequisites: ART-122, ART-130, GRD-111, GRD-118, GRD-120.

GRD-262. Branding for the Web and Other Media. 3 Credits.
LECT 1 hr., LAB 4 hrs.
The course will be approached from a graphic design page layout perspective. Students will apply the principles learned in graphic design to arrive at a well-designed brand identity and presence that works within the overall semiotic branding experience for the Web and other media. Students will need the full use of a current Macintosh computer.
Prerequisites: ART-122, ART-130, GRD-111, GRD-118 and GRD-120.

GRD-291. Special Topics in Graphic Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An examination of selected topics or issues in Graphic Design. Topics may differ each time the course is offered. Students should consult designated Graphic Design faculty for further information.
Prerequisites: A selected course in Graphic Design
Additional Fees: Course fee applies.
Honors Study

County College of Morris offers both full- and part-time students the opportunity to take Honors courses and/or earn an Honors degree in their major or program of study. Honors courses are offered in the more general academic areas that are requirements for most majors. They are designed to help superior students develop their special talents, interact with other individuals of similar abilities, and enjoy an intensive and stimulating learning atmosphere. Those who qualify may take as many Honors courses as desired.

An Honors degree provides exceptional students with unique study and learning opportunities to prepare them for highly specialized fields of work or transfer to the best colleges and universities in the United States. To earn an Honors degree, students enrolled in Associate in Applied Science programs must complete 16 credits of Honors courses. Students enrolled in Associate in Arts, Associate in Fine Arts, and Associate in Science programs must complete 18 credits.

Both Honors degree candidates and those students who decide to take various Honors courses meet regularly with the Honors adviser, become part of a small community of scholars engaged in sophisticated levels of inquiry, and can apply for Honors scholarships set aside for academic excellence. Special recognition of Honors study is indicated on student transcripts and on the diplomas of those who attain the degree.

Students can apply to take Honors courses or seek an Honors degree directly from high school or while enrolled at the college. Admission from high school requires an SAT score of at least 1170 or ACT equivalent. Any student who does not fulfill these requirements but still wishes to take honors courses should speak with the honors adviser.

For complete details about an Honors degree, the courses of study, application and scholarship information, please contact the Honors adviser.

Courses

| Biology        | General Biology I - Honors | 4 |
| BIO-180       | General Biology II - Honors | 4 |
|               | Introduction to Linguistics - Honors | 3 |
| ENG-123       | English Composition I Honors | 3 |
| ENG-131       | English Composition II Honors | 3 |
| ENG-283       | World Literary Traditions: Beginnings - 1650 - Honors | 3 |
| ENG-284       | World Literary Traditions: 1650 to Present: Honors | 3 |
| History       | The Ancient World - Honors | 3 |
| HIS-180       | The Middle Ages-Honors | 3 |
| HIS-181       | Modern Social Thought - Honors | 3 |
| HIS-183       | Early Modern Europe - Honors | 3 |
| HIS-184       | Modern Europe - Honors | 3 |
| HIS-210       | History of American Women - Honors | 3 |

| Philosophy    | Introduction to Philosophy-Honor | 3 |
| PHL-180       | Ancient Philosophy-Honors | 3 |
| Psychology    | General Psychology - Honors | 3 |
| PSY-180       | Child Psychology - Honors | 3 |
| PSY-215       | Honors Abnormal Psychology | 3 |
| Sociology     | Principles of Sociology - Honors | 3 |
| SOC-180       | Contemporary Social Issues - Honors | 3 |
Hospitality Management

Associate in Applied Science Degree

The hospitality industry encompasses the hotel, restaurant, travel, tourism and leisure management industries as well as other fields. This degree focuses on the areas of lodging such as luxury, convention, all-suite, casino and resort hotels. Students may also elect to study travel and tourism, meeting and event planning and management, bar and beverage management, and hospitality marketing. The Hospitality Management program provides academic and practical training for those students interested in future management positions. Transfer opportunities are available for those who wish to complete a bachelor's degree in this field. Students may also participate in a paid cooperative work experience which delivers valuable practical management and technical training.

For more information, visit the Hospitality Management website. (http://www.ccm.edu/academics/degrees/hospitality.aspx)

Please visit the Culinary Arts and Science catalog page (http://catalog.ccm.edu/credit/areasofstudy/culinaryarts) for information on that program.

Degrees

AAS Hospitality Management (p. )

AAS Restaurant and Culinary Management (p. )

AAS Hospitality Management

(P3420)

General Education Foundation

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>ENG-111 English Composition I</td>
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<tr>
<td>ENG-112 English Composition II</td>
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<td>Math Elective</td>
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Hospitality/Business Core

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>HOS-100 Serv-Safe Food Handling</td>
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</tr>
<tr>
<td>HOS-101 Introduction to Food</td>
<td>3</td>
</tr>
<tr>
<td>HOS-102 Food Management</td>
<td>3</td>
</tr>
<tr>
<td>HOS-103 Food Production</td>
<td>3</td>
</tr>
<tr>
<td>HOS-106 Success in Hospitality</td>
<td>1</td>
</tr>
<tr>
<td>HOS-118 Introduction to the Hospitality Industry</td>
<td>3</td>
</tr>
<tr>
<td>HOS-210 Dining Room Management</td>
<td>3</td>
</tr>
<tr>
<td>HOS-211 Human Resource Management in the Hospitality Industry</td>
<td>3</td>
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<tr>
<td>HOS-213 Food and Beverage Purchasing and Cost Controls</td>
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<td>Co-op/Internship Work Experience</td>
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<tr>
<td>ACC-110 Elements of Accounting</td>
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</tr>
<tr>
<td>or ACC-111 Principles of Accounting I - Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS-112 Introduction to Business</td>
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<tr>
<td>BUS-213 Business Law I</td>
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<td>Two courses in the below concentrations:</td>
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<td>Hospitality/Business Core Credits</td>
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Hotel

HOS-120 Hotel/Hospitality Management

HOS-234 Meeting and Event Sales, Planning, and Management

Restaurant

HOS-215 Bar and Beverage Service Management

HOS-233 Food as Art

Event Planning

HOS-201 Marketing and Event Planning

HOS-233 Food as Art

Travel and Tourism

HOS-122 World Cuisines

HOS-232 Principles of Travel and Tourism

Hospitality

Hospitality 100 level course

Hospitality 200 level course

Hospitality Credits 0

Total Credits 60-64

AAS Restaurant and Culinary Management

(NRAEF Certification)

A Hospitality Management Option

(P3434)

The hospitality industry is constantly changing which opens a multitude of opportunities for careers in this field. This option, within the Hospitality Management program, provides students with a focused approach to the largest segment of the hospitality industry. It also allows individual interest to drive the field of study. In this program, students have the opportunity to elect 6 credits towards exploring different areas of the hospitality industry. These may include restaurant management, culinary arts management, banquet planning, world travel and international cuisines. Upon completing this program, students enter the restaurant and culinary fields with an understanding of the work required to be successful and enthusiastic about their chosen field. Selected courses are recognized as National Restaurant Association ManageFirst Certificate courses.

General Education Foundation

Communication 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG-111 English Composition I</td>
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</table>
Certificates of Achievement

Restaurant Management and Event Planning

A Hospitality Management Certificate of Achievement (P0421)

This Certificate of Achievement provides a concise and accelerated approach to restaurant management, the largest segment of the hospitality industry. It is offered primarily to current and future industry professionals seeking national certification from the NRAEF ManageFirst program. In addition, this combination of skills provides the perfect basis for individuals interested in the field of event planning. Event planning brings imagination and creativity to business and social events in an entrepreneurial setting.

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<td>HOS-102</td>
<td>Food Management</td>
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<td>HOS-103</td>
<td>Food Production</td>
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<td>HOS-106</td>
<td>Success in Hospitality</td>
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<td>HOS-118</td>
<td>Introduction to the Hospitality Industry</td>
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<td>HOS-210</td>
<td>Dining Room Management</td>
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<td>or HOS-223</td>
<td>Cooperative Work Experience- Hotel/ Restaurant Management (135-300 Hours)</td>
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<td>HOS-211</td>
<td>Human Resource Management in the Hospitality Industry</td>
<td>3</td>
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<tr>
<td>HOS-213</td>
<td>Food and Beverage Purchasing and Control</td>
<td>3</td>
</tr>
<tr>
<td>ACC-110</td>
<td>Principles of Accounting I - Financial Accounting</td>
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<tr>
<td>or ACC-111</td>
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<td>BUS-112</td>
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<td>BUS-213</td>
<td>Business Law I</td>
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</table>

Courses

HOS-213 Food and Beverage Purchasing and Control 3

Total Credits 13

Faculty

Mark Cosgrove, CHE
Chairperson, Hospitality Management and Culinary Arts
Associate Professor, Hospitality Management
MALTS, Monmouth University
B.S., LaSalle College
A.O.S., Culinary Institute of America
SCC241A 973-328-5652 mcosgrove@ccm.edu

Prerequisites: HOS-101 or equivalent
Corequisites: HOS-101 or equivalent
Additional Fees: Course fee applies.
HOS-105. Food Science and Nutrition. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course covers the role of nutrition in food and health and the impact nutrition has on the food service industry. Students learn basic nutrition concepts and discuss current findings and controversies. Topics include foods, labels, recipes and menus for nutritional benefits, and plan diets. In laboratory sessions, students apply their knowledge of nutritional concepts to make healthier food. Included in the course is the opportunity to receive one NRAEF Certificate (Nutrition) toward the ManageFirst Certification.
Prerequisites: HOS-100
Corequisites: HOS-100
Additional Fees: Course fee applies.

HOS-106. Success in Hospitality. 1 Credit.
LECT 1 hr.
This course is designed to offer first-year students in Hospitality a comprehensive approach to success at CCM and in future career endeavors in the Hospitality Industry. An introduction to academic responsibility and personal growth will lead to thoughtful consideration of career goals. The planning, defining and organizing for success will be addressed on an individual basis in relation to the educational and career goals at CCM and in the future.

HOS-111. Conversational Spanish in Hospitality. 1 Credit.
LAB 2 hrs.
Topics covered in this course focus on the importance of building a welcoming work environment and encouraging diversity with a Spanish employee. The hospitality industry includes hotels, restaurants, banquet halls, hospitals, schools, office buildings, government buildings, cruise ships and operate in both the private and public sectors. The positions found in these establishments range from top-management to entry-level. Many of the positions are filled by Spanish-speaking workers who have the skills to fulfill the job requirements; however, many do not speak English. The industry is recognizing this communication barrier among their employees, and the purpose of this class is to help the student become better acquainted with the Spanish language in the hospitality industry focusing on vocabulary and grammar.

HOS-117. Introduction to Baking. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This is an introductory course in baking. This class introduces the student to the fundamental principles within a bakeshop and pastry kitchen. The student learns the basic baking ingredients and how they are used; weights, measurements, equipment and importance of accuracy; and basic procedure common to bakery formulas. Student create and bake breads, quick breads, muffins and assorted pies.
Additional Fees: Course fee applies.

HOS-118. Introduction to the Hospitality Industry. 3 Credits.
LECT 3 hrs.
A survey course of the hospitality industry which provides students with an overview of the role of management within the profession. Fundamentals of lodging management including luxury, convention, all-suite, gaming and resort hotels, and food service management, including restaurants, catering, and institutional and business food service are studied. In addition, travel and tourism, recreation and leisure management (theme parks, clubs and public parks), meeting and event sales, planning and management, senior living services and support infrastructure, and casino and gaming management, as the balance of the eight areas which comprise the main business segments of the hospitality industry, are studied. Basic concepts of ownership, franchising, management, human resources, marketing, cost control, facilities management, service and career opportunities are examined.

HOS-120. Hotel/Hospitality Management. 3 Credits.
LECT 3 hrs.
This course provides Hospitality Management students and aspiring hotel management professionals within the industry strong conceptual management underpinnings while addressing the unique requirements of lodging managers. Students are taken on a department-by-department tour of a full-service hotel. The organization and operation of lodging properties are analyzed from the perspective of the front office manager. This course combines discussions of hotel departmental managerial responsibilities, roles and practices with information directly relevant to careers in lodging management. Students learn about the procedures effective managers use to ensure their hotel’s success and thus, their own ultimate success.

HOS-121. Advanced Baking. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is a continuation of the baking methods and formulas presented in Introduction to Baking. Students prepare a variety of cakes and icings and learn to apply a variety of decorating styles and techniques. In addition, students create advanced yeast bread, pies, tarts, mousses and chocolates. Emphasis is also placed on dessert plating and presentation which will be covered during the combined lecture and laboratory classes.
Prerequisites: HOS-117
Additional Fees: Course fee applies.

HOS-123. International Cuisines. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
The study of the world of food and the cuisines of different cultures is one of the growing trends in the United States. Our modern culture brings together a multitude of different possibilities in the kitchen and is a fascinating and wide-ranging study of both practice and theory. This class will prepare menu items from around the world to delight the mind and expand the individuals cooking experience in a production kitchen.
Additional Fees: Course fee applies.

HOS-126. American Regional Cuisine. 1 Credit.
LAB 2 hrs.
American Regional Cuisine celebrates the diversity, distinction and delectable essences of American cooking. Organized by region, these recipes are drawn from every part of the menu, offering a range of complete meals for each culinary style.
Additional Fees: Course fee applies.
HOS-127. Italian Cuisine. 1 Credit.
LAB 2 hrs.
From savory soups to sweet desserts, students study Italian cooking in the same manner as a typical menu. Recipes are drawn from every part of the meal and offer a wide range of culinary styles. The course provides a fascinating introduction to the widely diverse cuisine of Italy.
Additional Fees: Course fee applies.

HOS-128. Chinese Cuisine. 1 Credit.
LAB 2 hrs.
Chinese cooking is one of the world’s oldest continuous culinary traditions, developed over the course of 4,000 years. A subject of profound importance for countless generations of Chinese philosophers, scholars, poets and ordinary people, the selection, preparation and consumption of food is much more than a matter of sustenance in Chinese tradition. This course examines several of these factors while preparing and sampling traditional Chinese dishes.
Additional Fees: Course fee applies.

HOS-129. Latin Cuisines. 1 Credit.
LAB 2 hrs.
Latin Cuisines investigates the origins of Iberian, Caribbean, Central and South American cooking and develops the student knowledge of these areas. The many similarities are only a starting point for the incredible diversity that is modern Latin Cuisine. The class will produce full Latin menus based on different periods and areas of the global community.
Additional Fees: Course fee applies.

HOS-201. Marketing and Event Planning. 3 Credits.
LECT 3 hrs.
The field of event planning is one of the most exciting and dynamic aspects of the hospitality industry. In order to be successful, the marketing of not just the business but also the individual is of primary importance. This course offers the opportunity to experience actual event planning while also studying menu, restaurant and personal marketing in relation to the hospitality industry. The course also offers potential certification in one NRAEF ManageFirst certificate in Hospitality and Restaurant Marketing.

HOS-210. Dining Room Management. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Practical training in the operations and practices of a modern dining room. Students will learn the techniques needed to work and succeed as a management professional in the dining environment. The importance of customer service will culminate with the operation of a theoretical restaurant and individual catering experiences as Dining Room staff and management.
Prerequisites: HOS-102
Additional Fees: Course fee applies.

HOS-211. Human Resource Management in the Hospitality Industry. 3 Credits.
LECT 3 hrs.
This course applies human resource management principles to the hotel and restaurant industry. Topics covered include recruitment, training, motivation, job descriptions and alternative personnel policies. The course emphasizes the vital role of the diversity within the industry. Students will consider human resources in the context of a complete operating business. Included in the course is the opportunity to receive one NRAEF Certificate in Human Resources towards the ManageFirst Certification.

HOS-213. Food and Beverage Purchasing and Cost Controls. 3 Credits.
LECT 3 hrs.
A more advanced course dealing with the concepts of selection and procurement in the hospitality industry. Special emphasis is given to food cost, the purchasing function, procurement and inventory controls. In addition, forecasting, budgeting, cash management, and profit and loss statements also are studied. Included in the course is the opportunity to receive two NRAEF certificates (Inventory and Purchasing and Controlling Foodservice Costs) towards the ManageFirst Certification.

HOS-215. Bar and Beverage Service Management. 3 Credits.
LECT 3 hrs.
A comprehensive study of food and beverage managerial principles, with an emphasis on alcoholic beverages. The manufacture, distribution, control procedures, legal aspects, integrity issues and the responsible service of alcoholic beverages are studied. Students gain product knowledge of distilled spirits, wines and beers, including an examination of contemporary non-alcoholic beverage alternatives. The opportunity for two NRAEF certificates is included in the course (Serv-Safe Alcohol and Bar & Beverage Management).

HOS-221. Cooperative Work Experience Hospitality (45-100 Hours). 1 Credit.
COOP 1 hr.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 45 and 100 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-222. Cooperative Work Experience Hospitality (90-200 Hours). 2 Credits.
COOP 2 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 90 and 200 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.
HOS-223. Cooperative Work Experience Hospitality (135-300 Hours). 3 Credits.
COOP 3 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 135-300 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-227. Internship Work Experience Hospitality (45-100 Hrs). 1 Credit.
LECT 1 hr.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 45 and 100 hours in duration. The course may be taken in fulfillment of requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.

HOS-228. Internship Work Experience Hospitality (90-200 Hours). 2 Credits.
LECT 2 hrs.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 90 and 200 hours in duration. The course may be taken in fulfillment of requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.

HOS-229. Internship Work Experience Hospitality (135-300 Hours). 3 Credits.
LECT 3 hrs.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 135 and 300 hours in duration. The course may be taken in fulfillment of requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.

HOS-232. Principles of Travel and Tourism. 3 Credits.
LECT 3 hrs.
Principles of travel and tourism offer Hospitality Management majors, other students, and aspiring travel and tourism professionals a comprehensive overview of the principles, practices and philosophies of this interdisciplinary segment of the hospitality industry. Major concepts, including the economics, history, career opportunities, global perspective, worldwide organizations, modes of travel and related services, providers and destination pursuits, are studied.
Prerequisites: HOS-100, HOS-101, HOS-102
Additional Fees: Course fee applies.

HOS-233. Food as Art. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to the art of food styling, food photography, garde manger and cake decoration. Topics covered include how to prepare, arrange, preserve food photo shoot, techniques on how to prepare pâtés, terrines and fresh cheese. This course covers the art and science of cake preparation, assembly and decoration. Students have the opportunity to create a portfolio of work.
Prerequisites: HOS-100, HOS-101, HOS-102

HOS-234. Meeting and Event Sales, Planning, and Management. 3 Credits.
LECT 3 hrs.
Meeting and Event Sales, Planning and Management offers Hospitality Management majors, other students and aspiring professionals in this discipline an in-depth study of generally accepted principles and practices in this segment of the hospitality industry. Career opportunities, corporate meeting planning, catering organization and administration, and other various types of meetings and events are examined.

HOS-239. Independent Study-Hospitality Industry. 3 Credits.
LECT 3 hrs.
This course is an independent work/study designed for the student on a topic that is selected in accordance with academic standards and dependent upon department chair approval.
Prerequisites: Permission of department chair.
Human Services - Liberal Arts and Sciences

Associate in Arts Degree

These university-parallel curricula are designed to meet the basic requirements of the first two years of college programs for students who plan to graduate and transfer to a four-year college or university to study for the baccalaureate degree. The curricula offer a wide range of flexibility in terms of a student’s ultimate educational goals and provide adequate preparation for further study leading to professional competence in specialized fields.

These programs also accommodate individuals seeking two years of a liberal higher education.

The program offers options in Human Services, Humanities/International Studies, Humanities/Music, and Humanities/Social Science.

Degrees

AA Human Services

An Option within Liberal Arts and Sciences

(P1134)

Historically the system of Human Services responded primarily to the needs of the poor. Today the system is quite diverse and responds to many human needs. A limited list of areas of need would include drug and alcohol rehabilitation, community mental health, school social services, domestic violence, hospitals and corrections. Services can be provided through several techniques, such as case work, group work and community organization.

The Human Services option allows the student a specialization in various areas of social welfare. The course material provides an understanding of the values and principles of professional practice, a study of how policies are formed and implemented, and a realization of the various human needs which develop in modern societies and how they are responded to by human service agencies and providers. In addition, opportunities exist for students to do volunteer work with local agencies. Students are advised by faculty in the Sociology, Economics and Anthropology Department.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

Laboratory Science Electives

Select one of the following:

<table>
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<tr>
<th>Social Science</th>
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<td>General Psychology</td>
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Humanities

Choose from General Education course list

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<td>History of the African American Experience</td>
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<td>History of American Women</td>
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Diversity

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General Education Foundation Credits

| 45 |

Human Services Core

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<tr>
<td>HMS-215</td>
<td>Intro to Social Welfare &amp; Human Services</td>
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<td>HMS-216</td>
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<td>PSY-229</td>
<td>Community Mental Health</td>
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<td>The Family</td>
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<td>ECO-211</td>
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<td>HIS-203</td>
<td>History of Minorities in U.S.</td>
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</table>

Total Credits

| 63 |

Faculty

Dr. Jill Schennum
Chairperson, Sociology, Economics and Anthropology
Associate Professor, Sociology
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M.A., Boston University
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Courses

HMS-215. Introduction to Social Welfare and Human Services. 3 Credits.

LECT 3 hrs.

An introduction to the goals, values and philosophy of social work as a profession. Examines the relationship between attitudes and values, economic, political and cultural conditions, and the evolution of social welfare services focusing attention on the historical developments of social services in the United States. Provides understanding of the basic elements of the client-worker relationship.
HMS-216. Human Needs and Social Services. 3 Credits.
LECT 3 hrs.
This course presents a conceptual framework through which human behavior is systematically understood. It explores the needs of people as determined by their biological and psycho/social growth and development, and by their special relationship to society and its problems. The means by which these needs can be met by the social welfare system also are presented.
Humanities/Social Science - Liberal Arts and Sciences

Associate in Arts Degree

These university-parallel curricula are designed to meet the basic requirements of the first two years of college programs for students who plan to graduate and transfer to a four-year college or university to study for the baccalaureate degree. The curricula offer a wide range of flexibility in terms of a student’s ultimate educational goals and provide adequate preparation for further study leading to professional competence in specialized fields.

These programs also accommodate individuals seeking two years of a liberal higher education.

The program offers options in Human Services, Humanities/International Studies, Humanities/Broadcasting Arts and Technology, Humanities/Media Studies - Journalism, Humanities/Music, Humanities/Musical Theatre and Humanities/Social Science.

Degrees

AA Humanities/Social Science

An Option within Liberal Arts and Sciences
(P1130)

- Liberal Arts and Sciences – American History Emphasis (p. 106)
- Liberal Arts and Sciences - Literature Emphasis (p. 106)
- Liberal Arts and Sciences – Philosophy Emphasis (p. 105)
- Liberal Arts and Sciences - Psychology Emphasis (p. 106)
- Liberal Arts and Sciences – Western Civilization Emphasis (p. 106)
- Liberal Arts and Sciences – Women and Gender Studies Emphasis (p. 106)
- Liberal Arts and Sciences – Writing Emphasis (p. 105)

The Liberal Arts Humanities/Social Science program is an ideal foundation for transfer to four-year colleges and universities in a wide variety of majors including English, History, Languages, Economics, Psychology, Sociology, Communication, Global Studies, Political Science and many other fields. It is considered a starting point for careers in law, education, science, government and human services or for those whose academic interests are in the specialized areas of the social sciences or humanities. After receiving the associate’s degree, students in this program generally transfer to earn a bachelor’s degree. The program especially accommodates students who wish to focus on general education classes or who want to take college-level courses for their own enrichment. Students uncertain of their career goals are offered an opportunity for exploration within this program.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

If you are considering a career in teaching, please read about the County College of Morris Teacher Education Specializations in English, History, Psychology, Sociology and Spanish.

General Education Foundation

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<td>COM-109 Speech Fundamentals</td>
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EMPHASES WITHIN CURRICULUM 1130 - LIBERAL ARTS AND SCIENCES

Within the Liberal Arts Curriculum are emphases which afford students an opportunity to concentrate in a particular area of liberal studies: English, History, Philosophy and Sociology. These emphases are distinct from the Education Specializations. All General Education requirements apply to these emphases.

There are two emphases in English, one in Writing and the other in Literature. There are two emphases in History, one in Western Civilization and the other in American History. The Philosophy emphasis includes both Western and non-Western thinkers. The Sociology emphasis is in Women and Gender Studies and there is a Liberal Arts and Sciences emphasis in Psychology.

Liberal Arts and Sciences - American History Emphasis

General Education Foundation

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<td>American Art</td>
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<td>History of American Women</td>
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**Liberal Arts Core**

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<td>American Literature From the Civil War To the Twentieth Century</td>
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**Total Credits**

63

Liberal Arts and Sciences - Western Civilization Emphasis

**General Education Foundation**

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** Liberal Arts Core Credits**

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**Total Credits**

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Liberal Arts and Sciences - Philosophy Emphasis

**General Education Foundation**

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<td>PHL-115 Logic</td>
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Liberal Arts and Sciences - Literature Emphasis

General Education Foundation

COMMUNICATION 9
  ENG-111 English Composition I
  ENG-112 English Composition II
  COM-109 Speech Fundamentals

MATH/SCIENCE/TECHNOLOGY 12
Choose from General Education course list
  Mathematics (3-8 CR)
  Laboratory Science (4-8 CR)
  Technology (0-4 CR)

SOCIAL SCIENCE 6
  PSY-113 General Psychology
  SOC-120 Principles of Sociology

HUMANITIES (see Curriculum Checksheet) 9
  HISTORY (see Curriculum Checksheet) 6
  DIVERSITY (see Curriculum Checksheet) 3

General Education Foundation Credits 45

LIBERAL ARTS CORE

ENG-246 English Classics From Beowulf to Paradise Lost: a Survey of Drama 3
  OR
  ENG-247 Romantics, Victorians and Moderns- Major British Writers of the 19th & 20th Centuries 3

Restricted Elective (see Curriculum Checksheet) 12

LIBERAL ARTS CORE Credits 18

Total Credits 63

Liberal Arts and Sciences - Psychology Emphasis

General Education Foundation

COMMUNICATION 9
  ENG-111 English Composition I
  ENG-112 English Composition II
  COM-109 Speech Fundamentals

MATH/SCIENCE/TECHNOLOGY 12
  Mathematics (3-8 CR)
  Laboratory Science (4-8 CR)
  Technology (0-4 CR)

SOCIAL SCIENCE 6
  PSY-113 General Psychology
  SOC-120 Principles of Sociology

HUMANITIES 9
  HISTORY 6
  DIVERSITY 3

GENERAL EDUCATION FOUNDATION 45

PSY-218 Cross-Cultural Psychology
  OR
  PSY-116 Psychology and Education of the Disabled

LIBERAL ARTS CORE

PSY-219 Developmental Psychology - the Human Lifespan
  OR
  PSY-213 Child Psychology
  OR
  PSY-214 Adolescent Psychology
  OR
  PSY-225 The Maladapted Personality

Restrictive Elective 3

Total Credits 63
LIBERAL ARTS CORE Credits

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Faculty

Clayton Allen
Chairperson, Associate Professor, Visual Arts
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A.B., East Carolina University
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B.A., New York University
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B.M. Manhattan School of Music  
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B.A., University of Miami  
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B.A., The College of Wooster  
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B.A., Bryn Mawr  
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M.A., University of Missouri-Columbia  
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BFA, University of Illinois, Champaign-Urbana  
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Dr. Dorothy M. Hollowell  
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Special Projects, Writing Center  
Ph.D., Tufts University  
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Courses

ECO-113. Elements of Economics. 3 Credits.
LECT 3 hrs.
For Career Option Students. This is a one semester course that combines abstract principles, simple geometric approaches, applied problems and their analysis for those students seeking an understanding of some fundamental economic principles and laws. This understanding is enhanced by exploring the mechanics, operations and usefulness of economics to consumer, businesses, governments, both nationally and internationally.
Prerequisites: MAT-011 or equivalent.

ECO-120. Economics and Economic Issues. 3 Credits.
LECT 3 hrs.
This course combines economic principles with applications to contemporary problems. Emphasis is placed on using economic concepts to analyze and understand social, political, philosophical and diversity issues. This course is a social science elective.

ECO-211. Principles of Economics I Macroeconomics. 3 Credits.
LECT 3 hrs.
Macroeconomics is the study of aggregate economic behavior. National income, employment, price stability and economic growth are analyzed. Fiscal and monetary policies to alleviate inflation and unemployment are also studied.
Prerequisites: MAT-016 or equivalent.

ECO-212. Principles of Economics II Microeconomics. 3 Credits.
LECT 3 hrs.
Microeconomics is the study of prices and markets. Product and resource markets under competitive and non-competitive conditions are analyzed. Behavior of the firm in the determination of price, output and employment of the factors of production is examined. This course includes an introduction to international economics.
Prerequisites: ECO-211.

ECO-217. Economics of Labor. 3 Credits.
LECT 3 hrs.
Labor economics analyzes the structure and performance of the market for labor and public policy as it affects the employment and remunerations of labor. Among the many multifaceted issues that may be explored are: demand for labor, supply of labor, employment and unemployment, inflation and wages, effects of unions on wages and employment, wage differentials, discrimination in the labor market, human capital theory, migration, job search, and the effects of international trade on domestic output, employment and wages.
Prerequisites: ECO-211
Corequisites: ECO-212.
ECO-291. Special Topics in Economics. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in economics. Topics may differ each time the course is offered. Students should consult the department chairperson for further information. This course is not offered every semester.

ECO-292. Special Topics in Economics. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in economics. Topics may differ each time the course is offered. Students should consult the department chairperson for further information. This course is not offered every semester.

Prerequisites: Permission of department chair.

ENG-007. Writing Skills Review. 1 Credit.
LECT 2 hrs.
An intense mini-course focused on the remediation of an individual's writing deficiencies as evidenced on the college's placement test. Students could be placed in this course as a pre-requisite to ENG-111.

Prerequisites: Enrollment from college's placement test.

ENG-022. Elements of Writing. 1.5 Credit.
LECT 1.5 hr.
An abbreviated version of ENG-025 Writing Skills, this class is for students who exhibit a level of skills on the English Placement Test that preempts their placement in a full semester non-credit course.

Prerequisites: Enrollment from college's placement test.

ENG-025. Writing Skills. 3 Credits.
LECT 3 hrs.
Designed to increase the student's proficiency in writing skills, paragraph development, the topic sentence, transitional techniques, comprehension, and supplemental structure and grammar. Lead to the short essay in preparation for English Composition I.

Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

ENG-111. English Composition I. 3 Credits.
LECT 3 hrs.
The first half of the 6-credit English Communications requirement emphasizes the fundamentals of written communications including expository prose, reading comprehension and interpretation, and rhetorical modes.

Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

ENG-112. English Composition II. 3 Credits.
LECT 3 hrs.
The second half of the English Communications requirement continues emphasis on expository prose and critical writing through the use of literary genres. Methods of literary research and a research paper are required.

Prerequisites: ENG-111 or ENG-131.

ENG-113. Creative Writing. 3 Credits.
LECT 3 hrs.
A workshop course designed to encourage and develop talent in the writing of poetry, short fiction and/or drama. Class discussions center on manuscripts submitted by the students.

ENG-114. Advanced Creative Writing. 3 Credits.
LECT 3 hrs.
A writer's workshop designed for students who have successfully completed Creative Writing and who wish to improve their work through discussion of class submissions and the works of established writers.
Prerequisites: ENG-113.

ENG-115. The Short Story. 3 Credits.
LECT 3 hrs.
A study of the short story as a specialized art form, involving the study of writing techniques and styles, films and critical analysis of selected stories.
Prerequisites: ENG-111 or ENG-131.

ENG-116. The Novel. 3 Credits.
LECT 3 hrs.
A survey of novels both classic and contemporary, with particular attention to the methods by which such novels are created. Included may be novelists as varied as Dickens, Camus, Flaubert, Vonnegut, Dostoyevsky, Bellow, Joyce and Hesse.
Prerequisites: ENG-111 or ENG-131.

ENG-118. Children's Literature. 3 Credits.
LECT 3 hrs.
A survey of children's literature including poetry, picture books, fairy tales and folklore, myths and epics, realistic fiction, and fantasy, with a special emphasis on multicultural and ethnic works.
Prerequisites: ENG-111 or ENG-131.

ENG-119. Introduction to Poetry. 3 Credits.
LECT 3 hrs.
Designed for the beginner to develop skill and confidence in reading, understanding, evaluating and appreciating poetry. Includes a wide variety of material but emphasizes short lyrics by major British and American authors. Students are not required to write original poetry.
Prerequisites: ENG-111 or ENG-131.

ENG-121. Introduction to Linguistics. 3 Credits.
LECT 3 hrs.
An overview of the dynamics of language, specifically American English. The course examines the fundamental concepts of language development and variation. Major topics include how we communicate, dialectical variations, language development and change, and language and gender.
Prerequisites: ENG-111 or ENG-131.

ENG-123. Introduction to Linguistics - Honors. 3 Credits.
LECT 3 hrs.
The course examines the fundamental concepts of language structure and dynamics, including language development, variation and change. Students are required to apply and expand basic theory through independent research and projects that are presented to the class.
Prerequisites: ENG-111 or ENG-131 and permission of department chair or honors advisor.

ENG-131. English Composition I Honors. 3 Credits.
LECT 3 hrs.
An advanced course in rhetoric and expository writing for students selected on the basis of academic record, testing or writing samples. Enriches the reading materials and assignments of English Composition I with supplementary materials designed to challenge the advanced student.
Prerequisites: Permission of department chair or honors advisor.
ENGL-111, ENGL-112 or ENGL-131, ENGL-132.
Prerequisites: ENG-111 or ENG-131 and permission of department chair or honors advisor.

ENGL-206. African and African-American Literature. 3 Credits.
LECT 3 hrs.
This course is intended to acquaint the student with the general themes of African and African-American writers through a broad sampling of fiction and poetry.
Prerequisites: ENGL-112 or ENGL-132.

ENGL-210. Fantasy Novels. 3 Credits.
LECT 3 hrs.
This course will explore fantasy literature as a reaction to the rationalism and realism that dominate post-industrial literature and will explore fantasy's ability to capture imaginations, offer alternative visions, and serve as an analysis of human nature and contemporary society. Authors may include J.R.R. Tolkien, Ursula Le Guin, George R.R. Martin, J.K. Rowling, Neil Gaiman, and Patrick Rothfuss.
Prerequisites: Take ENGL-111, ENGL-112 or ENGL-131 and ENGL-132.

ENGL-214. Women in Film. 3 Credits.
LECT 3 hrs.
Films from c. 1913 to the present are examined for the diverse images of women which they convey. Issues of class, race, ethnicity, global perspective and sexual preference are considered. Films by women directors and writers are emphasized, but coverage also includes works by significant male filmmakers. Genres range from classical Hollywood narrative fiction to documentary, animation and avant-garde.
Prerequisites: ENGL-111 and ENGL-112 or ENGL-131 and ENGL-132 or permission of department chair.

ENGL-220. Contemporary Literature. 3 Credits.
LECT 3 hrs.
Covers literary works of the last 10 years written by Western and non-Western authors, poets and playwrights in a multi-genre, multi-cultural format, with an emphasis on literature as the reflection of a respective contemporary culture. Writers to be discussed may include Rushdie, Baldwin, Pinter, et al.
Prerequisites: ENGL-111 and ENGL-112 or ENGL-131 and ENGL-132.

ENGL-224. Women in Literature. 3 Credits.
LECT 3 hrs.
Classic and contemporary literary works are examined for the images of women which they convey. Discussion focuses on relationships between such images and the realities of women's lives, past and present, in the United States and abroad. Issues of class, race, ethnicity, global perspective and sexual preference are considered in relationship to gender. Both male and female authors may be studied. Some film adaptations may be examined for comparisons with written works.
Prerequisites: ENGL-111, ENGL-112 or ENGL-131, ENGL-132 or permission of department chair.

ENGL-228. Literature of the Theatre. 3 Credits.
LECT 3 hrs.
Designed to give students a broad range of experience in "seeing" dramatic literature, not only through the reading and interpretation of plays, but also through the analysis of directors who have transferred plays from the abstract page to actual theatre production.
Prerequisites: ENGL-112 or ENGL-132.

ENGL-233. History of the Theatre I. 3 Credits.
LECT 3 hrs.
This course presents a historical survey of the major developments in the theatre from ancient Egypt, Greece and Rome through the time of Shakespeare. Students will become aware of the major developments in all areas of the theatre: acting, directing, design and theatre architecture.
Prerequisites: ENGL-112, ENGL-132.

ENGL-234. History of the Theatre II. 3 Credits.
LECT 3 hrs.
This course presents a historical survey of the major developments in the theatre from the time of Shakespeare to the present day. Each historical period includes study of the major dramatists and their works.
Prerequisites: ENGL-112 or ENGL-132 and ENGL-233.

ENGL-243. World Literary Traditions: Beginnings to 1650. 3 Credits.
LECT 3 hrs.
A comprehensive survey of Western and non-Western literature from the ancient world to 1650. Among genres emphasized are epic, lyric and drama. Representative works from Europe, China, India, Japan and Africa are included.
Prerequisites: ENGL-111, ENGL-112 or ENGL-131, ENGL-132.

ENGL-244. World Literary Traditions: 1650 to Present. 3 Credits.
LECT 3 hrs.
A comprehensive survey of Western and non-Western literature from 1650 to the present. Representative works from Europe, China, India, Japan and Africa are included. Major authors may include Moliere, Flaubert, Dostoevsky, Tolstoy, Tagore and Achebe.
Prerequisites: ENGL-111, ENGL-112 or ENGL-131, ENGL-132.

ENGL-246. English Classics From Beowulf to Paradise Lost: A Survey of Drama, Romances and Epics. 3 Credits.
LECT 3 hrs.
A chronological overview of England's early literary works by selected writers such as Chaucer, Spencer, Shakespeare, Marlowe and Milton.
Prerequisites: ENGL-111 and ENGL-112 or ENGL-131 and ENGL-132.

ENGL-247. Romantics, Victorians and Moderns: Major British Writers of the 19th and 20th Centuries. 3 Credits.
LECT 3 hrs.
A survey of the Romantic, Victorian and Modern periods of British literature, and a study of the growth of the novel. Major writers may include Blake, Wordsworth, Coleridge, Keats, E. Bronte, Browning, Arnold, Tennyson, Hardy, Lawrence, Yeats, Eliot and Joyce.
Prerequisites: ENGL-111, ENGL-112 or ENGL-131, ENGL-132.
ENG-249. American Literature From the Colonial to The Civil War. 3 Credits.
LECT 3 hrs.
A survey of American literature from colonial beginnings to the Civil War, including but not restricted to Franklin, Cooper, Poe, Hawthorne, Melville, Emerson, Thoreau and Whitman. The influence of women, Native Americans, African Americans and others who contributed to the development of American culture may be examined as well as concepts such as Calvinism, Neo-classicism and Romanticism.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132.

ENG-250. American Literature From the Civil War To the Twentieth Century. 3 Credits.
LECT 3 hrs.
A survey of literature written in America since 1865, including but not restricted to such writers as Dickinson, Twain, James, Wharton, Crane, Chopin, Eliot, Frost, Cather, Hemingway, Fitzgerald and Faulkner. The influence of women, African Americans, immigrants and others may be discussed along with cultural concepts such as Realism and Naturalism.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132.

ENG-283. World Literary Traditions: Beginnings - 1650 - Honors. 3 Credits.
LECT 3 hrs.
This course is the first part of a survey of world literature that focuses on classics from various cultures including Greek, Roman, Hebrew, Babylonian, Chinese, Persian, Japanese and European. Readings are intended to stimulate class discussions and thoughtful written assignments.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132 and permission of department chair or honors advisor.

ENG-284. World Literary Traditions: 1650 to Present: Honors. 3 Credits.
LECT 3 hrs.
This course is the second part of a survey of world literature that considers the major literary periods as reflected in classics of Western culture as well as African, Asian and Middle Eastern traditions. Attention is also given to racial issues. Readings are intended to stimulate both oral and written responses.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132 and permission of department chair or honors advisor.

ENG-291. Special Topics in English. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in English. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in English.

ENG-292. Special Topics in English. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in English. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in English.

PHL-111. Introduction to Philosophy. 3 Credits.
LECT 3 hrs.
An introduction to major themes of Western and Asian philosophical thought designed to give the student a grasp of the fundamental option which reflective persons face between opposing views of the world. The way in which this option was formed is traced, and the manner is shown in which this choice influences one's thinking about topics such as the nature of the self, truth, religion, morality and government.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022.

PHL-114. Ethics. 3 Credits.
LECT 3 hrs.
A survey of the most influential efforts of philosophers from diverse traditions to bring reason into the process of making appropriate and adequate choices in matters basic to the flourishing of human beings. Contemporary problems analyzed include end-of-life, reproductive, genetic engineering, punishment, business and environmental issues.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

PHL-115. Logic. 3 Credits.
LECT 3 hrs.
Logic is the study of reasoning, good and bad. Good reasoning moves from credible statements to others that are well supported by them. Bad reasoning obscures this process. This course examines features that make reasoning good or bad, develops critical skills in recognizing formal and informal patterns of reasoning, and deepens one's talent in constructing arguments that exemplify good reasoning.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025.

PHL-180. Introduction to Philosophy-Honor. 3 Credits.
LECT 3 hrs.
This seminar follows, conceptually and historically, dominant lines of philosophical thinking on themes widely taken to be fundamental in Western and Asian culture. The course also compares and contrasts classical with contemporary perspectives.
Prerequisites: Permission of department chair or honors advisor.

PHL-211. Philosophy of the Person. 3 Credits.
LECT 3 hrs.
A lecture-discussion course of classical readings from religious and humanist authors centering on related notions of human nature, person, self, self-actualization and freedom. An effort is made to assess some social policies by reference to an adequate notion of the person.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.
PHL-212. Philosophy and Religion. 3 Credits.
LECT 3 hrs.
This course surveys the development and interaction of world religions, such as Judaism, Christianity, Islam, African religions, Hinduism, Buddhism, Confucianism, Taoism and Shintoism. It examines major figures, stories, rituals and beliefs of the religions, and shows how they shape the lives of believers. Finally, it analyzes philosophical concepts such as God and gods, faith and reason, immortality, good and evil, karma, love, meditation, mysticism and nirvana.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

PHL-221. Philosophy of Plato. 3 Credits.
LECT 3 hrs.
Concentrated readings and in-depth discussion of several of the great dialogues of Plato, chosen from the following: Meno, Republic, Laws, Phaedo, Symposium, Phaedrus, Apology and Crito.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

PHL-280. Ancient Philosophy-Honors. 3 Credits.
LECT 3 hrs.
This seminar critically examines the central ideas of Plato and Aristotle on knowledge, mind, body, freedom, nature, ethics, politics and religion. The course also contrasts their ideas with those of other ancient philosophers, such as Pythagoras, Heraclitus, Parmenides, Zeno, Epicurus, Epictetus, Cicero and Aurelius. Students develop the ability to formulate their own views on philosophical issues.
Prerequisites: Permission of department chair or honors advisor.

PHL-291. Special Topics in Philosophy. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in philosophy. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A 100 Level Philosophy course or permission of department chair.

PHL-292. Special Topics in Philosophy. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in philosophy. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A philosophy 100-level course or permission of department chair.

POL-111. American Government. 3 Credits.
LECT 3 hrs.
A study of the myths and realities of the American political system. The course focuses on the constitutional development of the American system of government, the political, policymaking and implementing structures of American government, and the problem of representative government in the United States. Consideration is given to contemporary domestic and foreign policy issues.

POL-222. Constitutional Law. 3 Credits.
LECT 3 hrs.
This is a survey course which examines the constitutional development of the U.S., the growth of American constitutional doctrine and law, and the judicial process within which judicial decisions are formulated and given the force of law. The constitutional basis for the government's powers and the liberties of the individual are examined within this framework. Emphasis is given to landmark U.S. Supreme Court decisions.
Prerequisites: POL-111.

POL-231. State and Local Government. 3 Credits.
LECT 3 hrs.
A survey of the organizational structure and policies of local, county and state governments, with special emphasis on New Jersey. Students become acquainted with many of the major issues facing metropolitan, urban and suburban governing bodies.

POL-240. International Politics. 3 Credits.
LECT 3 hrs.
An introduction to the nature and problems of international politics. Analysis and consideration is given to the development and contemporary status of nation-states, their relationships and the elements of power politics. Emphasis is given to problems of war and peace, the nature of conflict and the various approaches to world peace.

POL-245. Comparative Government. 3 Credits.
LECT 3 hrs.
An examination of the variety of governmental systems, both western and non-western, whose importance is reflected in the increasing interdependent nature of the world community. The political systems of the traditional European powers (Great Britain, Germany and Russia) and strategically important non-western nation-states (Japan, China, India and Mexico) are reviewed. Trends in government in the developing countries are studied as well.

POL-270. Civil Liberties-Basic Rights and Freedom. 3 Credits.
LECT 3 hrs.
An analysis and examination of individual rights within a democratic society. Focus is on such major issues as freedom of expression and religion, political and racial equality, criminal justice, the Bill of Rights and its applicability to the states. The role of the judiciary, particularly the U.S. Supreme Court, is analyzed.

POL-291. Special Topics in Political Science. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in political science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Political Science.

POL-292. Special Topics in Political Science. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in political science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Political Science.

PSY-112. Career Development. 3 Credits.
LECT 3 hrs.
An in-depth exploration of the role of societal norms and educational and psychological factors upon individual career choices. Students establish, change or confirm career goals and learn skills necessary for ongoing career and life planning.
PSY-113. General Psychology. 3 Credits.
LECT 3 hrs.
An introductory survey of the scientific studies of human behavior on the following topics: human development, physiology, learning, individual differences, motivation, perception, personality, abnormal and social behavior. The course is designed to prepare the student for further study of the broad spectrum of psychology.

PSY-116. Psychology and Education of the Disabled. 3 Credits.
LECT 3 hrs.
A study of the social, emotional, physical and learning characteristics of individuals with disabilities. Methods of diagnosis and differentiation, curriculum, teaching techniques, resources and integration into the community are examined.
Prerequisites: PSY-113.

PSY-117. Health Psychology. 3 Credits.
LECT 3 hrs.
This course examines the effects of the physical, mental, cultural and environmental stressors on one's mental and physical health. Modern and ancient beliefs regarding the interaction of the mind and body are presented.
Prerequisites: PSY-113.

PSY-180. General Psychology - Honors. 3 Credits.
LECT 3 hrs.
This honors course is a more advanced General Psychology course which includes, but is not restricted to, a more advanced text, emphasis on research methodology, and lectures which explore subject matter in greater depth. The course introduces students to the scientific study of behavior with emphasis on critical thinking skills. Students improve their abilities to analyze data objectively both in written and oral presentations. The General Psychology Honors section can be used to fulfill the Honors Social Science elective. Admission to the course is based on the recommendation of the honors advisor only.
Prerequisites: Permission of department chair or honors advisor.

PSY-213. Child Psychology. 3 Credits.
LECT 3 hrs.
The course consists of the interplay of biological, psychological and cultural forces that shape the growing child from prenatal development through adolescence. Students learn to interpret relevant research using a critical-thinking approach.
Prerequisites: PSY-113.

PSY-214. Adolescent Psychology. 3 Credits.
LECT 3 hrs.
An examination of adolescence, the transitional period between childhood and adulthood. Issues covered include the adolescent in the context of family, school and work environments, emotional and cognitive changes and the maladapted adolescent.
Prerequisites: PSY-113.

PSY-215. Child Psychology - Honors. 3 Credits.
LECT 3 hrs.
This honors course consists of the interplay of biological, psychological and cultural forces that shape the growing child from prenatal development through adolescence. Students learn to interpret relevant research using a critical-thinking approach.
Prerequisites: PSY113 or PSY-180 and permission of honors advisor.

PSY-217. Educational Psychology. 3 Credits.
LECT 3 hrs.
This course introduces the student to psychological theory as it applies to teaching and learning. Topics include learning theory, motivation, tests and measurements, classroom management and teaching students with special needs. Educational Psychology is strongly recommended for students pursuing a career in teaching.
Prerequisites: PSY-113.

PSY-218. Cross-Cultural Psychology. 3 Credits.
LECT 3 hrs.
The student is exposed to the psychological experiences and individual differences in cognitive, emotional and behavioral development of individuals who represent diverse populations within the United States and learn how one's self-perception and the perception of others affect well-being.
Prerequisites: PSY-113.

PSY-219. Developmental Psychology - the Human Lifespan. 3 Credits.
LECT 3 hrs.
The course considers the developing person from conception through death in terms of biosocial, cognitive and psychological development and discusses how these three domains interact. Additionally, it considers how contextual issues such as age, gender, culture, socioeconomic status and ethnicity broaden our understanding of human development.
Prerequisites: PSY-113.

PSY-221. Psychology of Personality. 3 Credits.
LECT 3 hrs.
An in-depth discussion of major personality theories and relevant research. There is a focus on application to case studies and life experiences.
Prerequisites: PSY-113.

PSY-225. The Maladapted Personality. 3 Credits.
LECT 3 hrs.
This course considers the tools involved in distinguishing abnormal from normal behavior. It surveys the range of mental disorders included in the American Psychiatric Association's Diagnostic and Statistical Manual including anxiety disorders, depression, addictions, problems of children and the elderly, deviance and schizophrenia, and covers modern treatment interventions.
Prerequisites: PSY-113.

PSY-229. Community Mental Health. 3 Credits.
LECT 3 hrs.
A survey of institutional and community-based mental health programs of prevention and treatment, sources of environmental stress, identification of high risk groups, and the role of professionals and volunteers in the field.
Prerequisites: PSY-113 or an introductory course in Sociology.

PSY-290. Independent Study in Psychology. 3 Credits.
LECT 3 hrs.
The design, development and implementation of individual research from formulation of hypothesis to analysis of results in the field of psychology.
Prerequisites: Permission of department chair.
PSY-291. Special Topics in Psychology. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Psychology. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: PSY-113.

PSY-292. Honors Abnormal Psychology. 3 Credits.
LECT 3 hrs.
This honors course is an in-depth coverage of the assessment, diagnosis and treatment of psychological disorders as categorized by the American Psychiatric Association's Diagnostic and Statistical Manual. Students are required to complete a research project using the American Psychological Association format.
Prerequisites: PSY-113 or PSY-180 and permission of Honors Advisor.

SOC-108. Cultural Geography. 3 Credits.
LECT 3 hrs.
The study of the interaction of contemporary cultures and their physical environment. This course examines processes of globalization and their impact on national and local level social processes. Emphasis is placed on the global capitalist economy and its relation to national economies, political systems, populations, environments and religions.

SOC-110. Sociology of Health and Illness. 3 Credits.
LECT 3 hrs.
An analysis of the structure and function of health institutions in society with emphasis on the social psychology of illness behavior, the practitioners of medicine, the social organization of the hospital, managed care and future trends in medical care.

SOC-118. Sociology of Work and Occupations. 3 Credits.
LECT 3 hrs.
Examination and analysis of the world of work and occupations in modern society. Sociological and anthropological techniques are used to investigate work and careers and their effect on lifestyles. Students gain personal insights through research which investigates different ways of making a living and the consequences on individual lives.

SOC-120. Principles of Sociology. 3 Credits.
LECT 3 hrs.
A comprehensive introduction to the discipline of sociology, examining the basic concepts, e.g., role, status, social structure, research methods, culture, socialization, stratification, norms, values, groups, associations, institutions, community, deviance and society, as well as exploring its foundations and history, and techniques of seeing and understanding the world from a sociological perspective.

SOC-180. Principles of Sociology - Honors. 3 Credits.
LECT 3 hrs.
A systematic introduction to basic sociological concepts, culture, norms, status, role, groups, character structure, association, institutions, community, deviance and society.
Prerequisites: Permission of department chair or honors advisor.

SOC-202. Contemporary Social Issues - America As a Diverse Society. 3 Credits.
LECT 3 hrs.
Investigates issues that challenge citizens in post-modern America. Scientific analysis of topics such as global, political and economic trends, inequality, group conflicts, pluralism, urbanism, alienation and bureaucracy, family disorganization, mass communications, addictive behaviors and social movements. Special attention is given to field research which develops student competence in understanding contemporary social issues.
Prerequisites: SOC-120.

SOC-206. Religion and Human Experience. 3 Credits.
LECT 3 hrs.
An interdisciplinary course with sociological, psychological and anthropological perspectives on religion. Topics include interactions between the individual, society and religion, ritual and religious experience, religious organization and secularization. Comparisons are made between western and non-western religious systems. The rise of fundamentalism and new religious consciousness are also considered.
Prerequisites: An introductory course in Anthropology, Psychology or Sociology.

SOC-209. The Family. 3 Credits.
LECT 3 hrs.
Analysis of marriage and family in various cultures with in-depth study of the contemporary United States including historical development and future trends. Topics covered are romantic love, courtship, marital interaction, divorce, gender roles and the feminist movement. Special attention is given to the post-modern family and cross-cultural comparisons are made
Prerequisites: SOC-120.

SOC-210. Sociology of Aging. 3 Credits.
LECT 3 hrs.
Introduction to the study of aging and old age. The process of aging, social roles, population trends, economic and political activity, and family life. Middle-age and the transition to old age in modern societies are discussed. Field projects are assigned.
Prerequisites: SOC-120.

SOC-214. Cultural Diversity in America - the Sociology of Ethnic and Minority Groups. 3 Credits.
LECT 3 hrs.
A study of diversity in American life with an emphasis on the cultural, political and interactional patterns of ethnic and minority groups. Topics covered include assimilation, intergroup cooperation and conflict, cross-cultural communication, and theories of prejudice and discrimination. Attention is also given to national and global demographic trends.
Prerequisites: SOC-120.

SOC-215. Physical Anthropology. 3 Credits.
LECT 3 hrs.
The study of humankind emphasizing human evolution with the integration of recent research in the areas of paleontology, primatology, human genetics and ethnology. Objectives of the course are to provide a knowledge of humankind's biological and physical heritage with emphasis on origins and variations.
SOC-216. Cultural Anthropology. 3 Credits.
LECT 3 hrs.
An introduction to the analysis of non-western cultures and anthropological theory and methods. Emphasis is placed on the comparison of western and non-western cultures, including cross-cultural comparisons of political, economic, social and cognitive systems.

SOC-217. Archaeology. 3 Credits.
LECT 3 hrs.
Introduction to the general principles of archaeological research and theory. An overview of human history and prehistory as evidenced through material remains, including the rise of state-level societies in the old and new worlds.

SOC-221. Sociology of Gender. 3 Credits.
LECT 3 hrs.
An in-depth introduction to social science theory and research in the field of gender studies. The new scholarship on women's issues, feminism and gender relations is examined and critiqued. 
Prerequisites: SOC-120.

SOC-222. Deviant Behavior. 3 Credits.
LECT 3 hrs.
A review of deviant behavior by various deviant, outsider or disvalued members of a society, with emphasis on the environmental (socio-cultural) causes, the rewards and punishments of conforming or not conforming to group norms, the identification of deviants, the process of becoming prejudiced, why people conform, why people like each other, and the dynamics of groups. Topics are examined in a cross-cultural and historical perspective.
Prerequisites: SOC-120.

SOC-224. Social Psychology. 3 Credits.
LECT 3 hrs.
A study of group behavior and the influence of groups on the perception, thinking and behavior of the individual. Topics are chosen from the following: social influences on the development of personality and attitudes, the causes of human aggression, the nature of prejudice, why people conform, why people like each other, and the dynamics of groups. Topics are examined in a cross-cultural and historical perspective.
Prerequisites: PSY-113 or SOC-120.

SOC-230. Sociology of Globalization. 3 Credits.
LECT 3 hrs.
Is the current era of globalization a unique historical period or is it simply a variation of previous ones? This course examines recent social, economic and political trends, assesses the state of the world, and identifies the forces that are shaping it.
Prerequisites: SOC-120.

SOC-280. Contemporary Social Issues - Honors. 3 Credits.
LECT 3 hrs.
Scientific analysis of major social institutions and major social issues. Problems covered include race and ethnic relations, urbanism and population, as well as fundamental institutional problems of economics, politics, education and family. Emphasizes social theory and methods of social research.
Prerequisites: SOC-180 or SOC-120 and permission of department chair or honors advisor.
International Studies - Liberal Arts and Sciences

Associate in Arts Degree

These university-parallel curricula are designed to meet the basic requirements of the first two years of college programs for students who plan to graduate and transfer to a four-year college or university to study for the baccalaureate degree. The curricula offer a wide range of flexibility in terms of a student’s ultimate educational goals and provide adequate preparation for further study leading to professional competence in specialized fields.

These programs also accommodate individuals seeking two years of a liberal higher education.

The program offers options in Human Services, Humanities/International Studies, Humanities/Music, and Humanities/Social Science.

For more information about the International Studies option, explore the tabs above or visit the Languages & ESL Department (http://www.ccm.edu/academics/divdep/liberalarts/languages), where the program is housed.

Degrees

AA International Studies
An Option within Liberal Arts and Sciences

(P1160)

The program provides students with the general education course work and global perspective needed to transfer to a similar program at a four-year institution. It is ideal for students whose career goals are in the fields of international affairs, diplomacy, foreign languages and cultures, teaching and/or research.

General Education Foundation

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Faculty

James Hart
Chairperson, Languages and ESL
Assistant Professor, ESL, Spanish and Intercultural Communication
M.A., Montclair State University
B.A., American University
DH 207A 973-328-2486 jhart@ccm.edu

Courses

ISA-110. Intercultural Communication. 3 Credits.
LECT 3 hrs.
This course explores the theory and practice of communication between individuals or groups from different cultures. Topics include a basic theoretical foundation in culture and communication, cultural values, worldview, verbal/nonverbal communication, cultural identity and intercultural competence.

Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

ISA-215. A Survey of Islam. 3 Credits.
LECT 3 hrs.
This course covers the central beliefs and practices of Islam, one of the major world religions. It analyzes passages in the Qur’an and their often varied interpretations among the Muslim community. It studies the life of the Prophet Muhammad and highlights of Muslim history, examines the divisions between Sunni and Shiite Muslims, explores diverse schools of Sharia (Islamic Law), and shows the large common ground Islam shares with Christianity and Judaism in its belief in one God, major prophets, stories and ethical beliefs. Finally, the course analyzes current events in Muslim countries, especially in the Middle East.
**Journalism, Media Studies**

The program in Journalism prepares students to transfer and complete degree requirements in communication or journalism. This program draws from the humanities to develop communication skills and technical proficiencies. The Journalism program also allows some degree of specialization.

For more information, visit the Department of Communication webpage. (http://www.ccm.edu/academics/divdep/liberalarts/communication/default.aspx)

**Degrees**

**AA Journalism, Media Studies - An Option within Liberal Arts**

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**Total Credits**

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**Journalism Core Credits**

18

**Total Credits**

63

1 Students should consult their academic advisors when selecting these courses.

**Faculty**

John Soltes
Instructor, Journalism
Special Projects, Youngtown Edition
M.S., Columbia University
B.A., Rutgers University
DH 301 973-328-5469 jsoltes@ccm.edu

**Courses**

**COM-101. Introduction to Communication. 3 Credits.**

LECT 3 hrs.

Survey of the field of communication within a variety of contexts including: Interpersonal, Group, Organizational, Mass Media, Intercultural and International Communication.

Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-007.

**COM-102. Advertising and Society. 3 Credits.**

LECT 3 hrs.

This is a survey course that follows the advertising industry from the early days of the Industrial Revolution through modern social campaigns. There will a strong emphasis on the cultural and societal effects of advertising messages on mass markets. There will also be a focus on advertising as a form of social communication, which has imbedded impacts on socio-economic, political and global communication. Students will acquire skills in media literacy and ethical reasoning with respect to advertising campaigns. By the end of the course students will be able to identify the current challenges to consumers and the advertising industry.

Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.

**COM-103. Introduction to Public Relations. 3 Credits.**

LECT 3 hrs.

This course is a survey of the principles and practices in public relations. Students gain an understanding of the history, development and globalization of PR, the impact of PR criticism, the techniques and tactics of PR practitioners. They learn the concepts of "publics" and professionalism. Special emphasis is placed on the comprehension of the laws and ethics mandated for the PR industry and the goals and objectives necessary to the future credibility of PR.

Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.
COM-104. Interpersonal Communication. 3 Credits.
LECT 3 hrs.
Students in this course discover how to communicate effectively in everyday relationships through the study of both theoretical frameworks and practical application. Topics include self-perception, cultural influences, verbal and nonverbal messages, conflict management, as well as an in-depth look at communication within the family unit, friendships, romantic partners and the workplace. **Prerequisites:** Placement basis or ENG-025 or ENG-022 or ENG-007.

COM-105. Media Literacy. 3 Credits.
LECT 3 hrs.
Media Literacy prepares students to better understand the 21st century media environment. Topics covered include media form, media content, media effects and influence, and media industries. There will be a particular focus on developing stronger critical and analytical skills to better use media for personal and professional benefit. We will investigate media through several perspectives with a concentration on how media works and how to better navigate and manage the information we receive. **Prerequisites:** Placement basis or ENG-007, ENG-022 or ENG-025.

COM-109. Speech Fundamentals. 3 Credits.
LECT 3 hrs.
This course introduces the fundamentals of organizing, outlining, and presenting narrative, informative and persuasive speeches. Specific attention is given to each student's verbal and nonverbal delivery in the communication of ideas, as well as to the development of creative abilities, critical insights and listening skills. **Prerequisites:** Placement Basis or ENG-007 or ENG-022 or ENG-025.

COM-111. Introduction to Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in reporting and writing news stories across multimedia platforms. Topics include new media, writing, reporting, interviewing, researching, news judgment, Associated Press style, media ethics and media law. Students utilize computers in the classroom to research topics and complete assignments on deadline. The culmination of the course is an e-portfolio that utilizes a basic content management system and combines written articles with original photography. A one-time commitment of three hours of newspaper production is required. **Corequisites:** ENG-111 or department permission.

COM-115. Introduction to the Mass Media. 3 Credits.
LECT 3 hrs.
Introduction to Mass Media is a survey course focusing on the history and consequences of mass media for the individual, society and culture. Specific areas of emphasis include the historical development of media forms, theories concerning the effects of media, and the evolving future of media. Special attention will also be paid to current events in the media and their social consequences. **Prerequisites:** Placement basis or ENG-025 or ENG-022 or ENG-007.

COM-120. Broadcast Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in broadcast reporting, writing and editing. Students utilize traditional broadcast skills within a multimedia environment. Topics include broadcast writing techniques and style, newscast organization, photojournalism, social media, new media, broadcast stories for online journalism, media ethics and media law. Students write broadcast scripts, maintain blogs and produce timed newscasts. **Prerequisites:** COM-111.

COM-209. Editing and Publication Design. 3 Credits.
LECT 3 hrs.
Instruction and practice in copy editing, layout, design, headline writing, photo editing, news evaluation, media ethics and media law. Students utilize computers, Adobe Photoshop and Adobe InDesign to complete assignments, and they help produce the student newspaper. **Prerequisites:** COM-111 or permission of department chair.

COM-228. Cooperative Work Experience Communication. 3 Credits.
COOP 3 hrs.
This course provides students in the Communications curriculum with job-oriented training and practical experience in a real work environment. This course is designed to supplement the students academic coursework and to facilitate the career development and exploration process. **Prerequisites:** Permission of department chair **Corequisites:** COM-229.

COM-229. Coop. Work Experience - Related Class. 1 Credit.
LECT 1 hr.
**Prerequisites:** Permission of Coordinator **Corequisites:** COM-228.

COM-230. Communications Internship. 3 Credits.
LECT 3 hrs.
The Communication Internship offers practical experience working part-time for an approved communication agency, organization or business under the supervision of a Communication faculty. Alternatively, it can be used to complete a significant research project under the guidance of a Communication faculty member. Students must have second year status, GPA of 3.5 or higher. **Prerequisites:** Permission of department chair.
**COM-234. Introduction to Film. 3 Credits.**
LECT 3 hrs.
Through the study of representative major works of world cinema, students are introduced to the history and development of film as a creative medium or artistic expression and mass communication. Topics include production practices, cinema as an industry, the relationship between history and cinema, the psychology of cinema, and socio-cultural factors related to cinema. Students are encouraged to approach film analytically and critically, to consciously examine the language and aesthetic forces of cinema, and to expand cinematic interest into realms beyond the Hollywood mainstream production.

**Prerequisites:** Placement basis or ENG-007 or ENG-025 or ENG-022.

**COM-291. Special Topics in Communication. 3 Credits.**
LECT 3 hrs.
An examination of selected topics or issues in Communication. Topics may differ each time the course is offered. Students should consult the assistant chair for further information.

**Prerequisites:** An introductory course in Communication.

**COM-292. Special Topics in Communication. 3 Credits.**
LECT 3 hrs.
An examination of selected topics or issues in Communication. Topics may differ each time the course is offered. Students should consult the department chair for further information.

**Prerequisites:** An introductory course in Communication.
Landscape and Horticultural Technology

Associate in Applied Science Degree

Named one of the top six Outstanding Post-Secondary Agriculture Programs in the United States by the National Association of Agricultural Educators, the Landscape and Horticultural Technology (LHT) programs at County College of Morris (CCM) provide students with the technical knowledge and practical skills to succeed in a wide range of horticultural related professions.

With a primary focus on ornamental horticulture, students have an opportunity to earn an Associate in Applied Science degree in Landscape Management and Design, Turf and Turfgrass Management, or Agribusiness.

The programs also provide students who have very focused career goals with the choice of earning Certificates of Achievement in Landscape Design, Grounds Maintenance, Landscape Contractor, Garden Center, or Horticultural Apprenticeship Certificates in Horticulturist, Landscape Technician or Landscape Management Technician. These certificates are designed specifically to meet the needs of students who may be currently employed and want to enhance their skill set or for those who already hold baccalaureate or associate degrees in other areas. Certificates of Achievement may also be desirable for students who are making a career change and want or need to earn a credential as quickly as possible.

Each program is designed to prepare students for employment in specialized occupations in the field of agriculture, horticulture, and ornamental horticulture.

The Agribusiness degree program prepares students for careers in horticulture business operations including retail and wholesale endeavors, service businesses, retail and wholesale equipment suppliers, and floral shops.

The Landscape Management and Design degree program prepares students to become professional landscape designers or specialists in the design and installation of landscapes in both the residential and commercial markets.

The Turf and Turfgrass Management degree program is specifically structured to prepare students to become professional turf managers of commercial complexes, sports turf, recreational turf and golf courses.

The emphasis in each program is on the development of professional attributes, problem-solving capability and strong technical skills. Students are provided opportunities to develop leadership ability and entrepreneurial skills as well as skills in management.

Graduates of the Landscape and Horticultural Technology programs can find employment as landscape designers, landscape installers, managers and supervisors, golf course superintendents, grounds maintenance supervisors, and much more. Upon completion of the associate’s degree, students may also elect to transfer to a four-year institution to further their education. The Department of Landscape and Horticultural Technology has an articulation agreement with Delaware Valley College which provides CCM-LHT graduates a guarantee of junior status as long as they meet the minimum grade point criteria.

For more information, visit the Landscape and Horticultural Technology website. (http://www.ccm.edu/academics/divdep/hns/LHT)

Degrees

- AAS Agribusiness (p. 123)
- AAS Landscape Management and Design (p. 124)
- AAS Turf and Turfgrass Management (p. 124)

Agribusiness

(P3321)

This program provides career preparation in the skills needed to work in horticultural related service industries as well as in both wholesale and retail sales of horticultural products. It is ideal for those who love the business aspect of the horticultural field but who do not feel drawn to designing and for those with a desire to be actively involved in sales positions. The Agribusiness degree program includes a strong emphasis on both horticultural technical knowledge as well as business management skills. Career opportunities are varied and, in addition to retail and wholesale nurseries, include equipment suppliers, landscape product suppliers, fertilizer and pesticide sales, as well as business management related to design build companies.

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

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<td>LHT-110 Plant Science</td>
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<tr>
<td>LHT-111 Horticulture</td>
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<tr>
<td>LHT-114 Plant Ident., Mangt., &amp; Use</td>
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<tr>
<td>Select one of the following:</td>
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<tr>
<td>LHT-108 Herbageous Plant Materials</td>
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<tr>
<td>LHT-124 Maintenance</td>
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<tr>
<td>LHT-101 Management</td>
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</tr>
<tr>
<td>LHT-115 Horticultural</td>
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<tr>
<td>LHT-215 Pest Management</td>
<td>4</td>
</tr>
<tr>
<td>LHT-231 Landscape</td>
<td></td>
</tr>
<tr>
<td>LHT-231 Equipment</td>
<td></td>
</tr>
</tbody>
</table>
Landscape Management and Design
(P3320)

This program provides career preparation in the skills needed to design, build and manage ornamental and natural landscapes. It is ideal for those with an artistic flair who also enjoy working outdoors and for anyone who derives satisfaction from building and completing projects. Students learn to measure, analyze, draw and install landscapes. Hands-on activities are provided whenever possible. Career opportunities abound for the landscape designer and install company are also tremendous. Because students also learn technical aspects of landscape installation, graduates are in as much demand as skilled technicians in landscape and plant material installation. Graduates may also elect to transfer into a Landscape Architecture program, enrolling in a bachelor's or master's degree program.

General Education Foundation

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG-111</td>
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<td>CHM-117</td>
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Landscape Management and Design Core

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</table>

Total Credits 66-67

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

Turf and Turfgrass Management
(P3324)

This program provides career preparation in the skills needed to manage large turf areas including golf courses, sports turf and both active and passive recreational turf areas. It is ideal for those who enjoy sports or who have participated in sports and want to find a rewarding career that provides continued contact with sports-related activities. Technical skills including understanding turfgrass physiology and morphology, soils management, installation techniques, and grounds management are all included in this course of study. Additionally, management and problem-solving skills are also an integral component. Graduates of the Turf and Turfgrass Management program are prepared for entry into a career in turf management or may choose to transfer to a four-year program in turf science.

General Education Foundation

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<td>BIO-122</td>
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</table>

Landscape Management and Design Core Credits 46

Total Credits 66-67

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

Turf and Turfgrass Management Core

<table>
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Choose from General Education course list

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<tr>
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<td>LHT-111</td>
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<tr>
<td>LHT-114</td>
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<td>LHT-115</td>
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<td>LHT-235</td>
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<td>LHT-234</td>
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</tbody>
</table>
Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

Certificates of Achievement

- Landscape Design - A Certificate of Achievement within Landscape and Horticultural Technology (p. 125)
- Grounds Maintenance - A Certificate of Achievement within Landscape and Horticultural Technology (p. 125)
- Landscape Contractor - A Certificate of Achievement within Landscape and Horticultural Technology (p. 125)
- Garden Center - A Certificate of Achievement within Landscape and Horticultural Technology (p. 125)

Landscape and Horticultural Design

Certificates of Achievement

The Landscape and Horticultural Technology Certificates of Achievement are designed for current or future professionals who want to improve their technical knowledge and skills in any of the four certificate areas. Each curriculum is balanced with theory and hands-on experiences. Students complete projects using the greenhouses, the plant preparation laboratory, the landscape design studio, the computer laboratory and the horticultural shop. The four certificate areas are: Landscape Design, Grounds Maintenance, Landscape Contractor and Garden Center. The Certificates of Achievement are designed primarily for part-time students who are currently working or plan to work in one of these areas. It is possible to complete any certificate within three years utilizing evening classes or within a shorter period of time with day classes or a combination of face-to-face and online or hybrid classes. Students with diverse career goals may earn more than one certificate.

**Landscape Design**

A Certificate of Achievement within Landscape and Horticultural Technology (P0320)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LHT-108</td>
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<tr>
<td>LHT-110</td>
<td>Plant Science</td>
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</tr>
<tr>
<td>LHT-114</td>
<td>Landscape Plant Ident., Mangt., &amp; Use</td>
<td>3</td>
</tr>
<tr>
<td>LHT-211</td>
<td>Landscape Design and Planning I</td>
<td>3</td>
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<tr>
<td>LHT-212</td>
<td>Landscape Design &amp; Planning II</td>
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</tr>
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<td>BUS-205</td>
<td>Landscape Specifications and Estimating</td>
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<tr>
<td><strong>Total Credits</strong></td>
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**Grounds Maintenance**

A Certificate of Achievement within Landscape and Horticultural Technology (P0321)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHT-110</td>
<td>Plant Science</td>
<td>3</td>
</tr>
<tr>
<td>LHT-215</td>
<td>Plant Pest Management</td>
<td>4</td>
</tr>
<tr>
<td>LHT-124</td>
<td>Grounds Maintenance and Development</td>
<td>3</td>
</tr>
<tr>
<td>LHT-111</td>
<td>Introduction to Horticulture</td>
<td>4</td>
</tr>
<tr>
<td>LHT-116</td>
<td>Horticultural Soils</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
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</table>

Landscape Contractor

A Certificate of Achievement within Landscape and Horticultural Technology (P0322)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
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<td>LHT-110</td>
<td>Plant Science</td>
<td>3</td>
</tr>
<tr>
<td>LHT-114</td>
<td>Landscape Plant Ident., Mangt., &amp; Use</td>
<td>3</td>
</tr>
<tr>
<td>LHT-211</td>
<td>Landscape Design and Planning I</td>
<td>3</td>
</tr>
<tr>
<td>LHT-116</td>
<td>Horticultural Soils</td>
<td>4</td>
</tr>
<tr>
<td>BUS-205</td>
<td>Landscape Specifications and Estimating</td>
<td>3</td>
</tr>
<tr>
<td>LHT-231</td>
<td>Landscape Construction &amp; Equipment</td>
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</tr>
<tr>
<td><strong>Total Credits</strong></td>
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Garden Center

A Certificate of Achievement within Landscape and Horticultural Technology (P0323)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LHT-110</td>
<td>Plant Science</td>
<td>3</td>
</tr>
<tr>
<td>LHT-215</td>
<td>Plant Pest Management</td>
<td>4</td>
</tr>
<tr>
<td>LHT-114</td>
<td>Landscape Plant Ident., Mangt., &amp; Use</td>
<td>3</td>
</tr>
<tr>
<td>LHT-111</td>
<td>Introduction to Horticulture</td>
<td>4</td>
</tr>
<tr>
<td>Business Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LHT-108</td>
<td>Herbaceous Plant Materials</td>
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<tr>
<td><strong>Total Credits</strong></td>
<td></td>
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</tbody>
</table>

*Students should consult their academic advisors when selecting these courses.*

Apprenticeship Programs

Horticulture Apprenticeship Programs

- Landscape Management Technician (p. 126)
- Landscape Technician (p. 126)
- Horticulturist (p. 126)

The Horticultural Apprenticeship Program involves a three-way partnership between the student, an employer and the Landscape and Horticultural Technology Program teaching staff. Unique among LHT Certificates of Achievement, these options require that the student be employed throughout the educational process and that the employer serves as an on-the-job mentor to the student. Students enrolled in the apprenticeship program must be employed by an employer who has registered with their local county apprentice coordinator. Upon completion of all course requirements, students receive a certificate of completion from County College of Morris.
and upon completion of all work processes receive an Apprentice Certification from the State of New Jersey, Department of Labor.

**Landscape Management Technician**  
(P0324)

**One-Year Option**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHT-110</td>
<td>Plant Science</td>
<td>3</td>
</tr>
<tr>
<td>LHT-215</td>
<td>Plant Pest Management</td>
<td>4</td>
</tr>
<tr>
<td>or LHT-116</td>
<td>Horticultural Soils</td>
<td></td>
</tr>
<tr>
<td>LHT-114</td>
<td>Landscape Plant Identification, Management and Use</td>
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Select one of the following: 3-4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>LHT-111</td>
<td>Introduction to Horticulture</td>
</tr>
<tr>
<td>LHT-124</td>
<td>Grounds Maintenance and Development</td>
</tr>
</tbody>
</table>

Business Elective 1

Total Credits 13-14

1 Students should consult their academic advisors when selecting these courses.

**Landscape Technician**  
(P0324)

**Two-Year Option:** Students must complete all courses in the One-Year LMT or receive equivalent credit for those courses prior to starting this program.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHT-231</td>
<td>Landscape Construction and Equipment</td>
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</tr>
<tr>
<td>LHT-115</td>
<td>Horticultural Computer Software Applications</td>
<td>3</td>
</tr>
<tr>
<td>LHT-215</td>
<td>Plant Pest Management</td>
<td>4</td>
</tr>
<tr>
<td>LHT-116</td>
<td>Horticultural Soils</td>
<td>4</td>
</tr>
</tbody>
</table>

One-Year LMT credits 13-14

Total Credits 27-28

**Horticulturist**

**Three-Year Option:** Students must complete all courses in the Two-Year LT (including all LMT courses) or receive equivalent credit for those courses prior to starting this program.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LHT-211</td>
<td>Landscape Design and Planning I</td>
<td>3</td>
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<tr>
<td>LHT-212</td>
<td>Landscape Design and Planning II</td>
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</tr>
<tr>
<td>BUS-205</td>
<td>Landscape Specifications and Estimating</td>
<td>3</td>
</tr>
<tr>
<td>Math Elective</td>
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<tr>
<td>Communications Elective 1</td>
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<tr>
<td>Business Elective 1</td>
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<td>3</td>
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</tbody>
</table>

One-Year LMT credits 13-14

Two-year LMT credits 14

Total Credits 45-46

Students should consult their academic advisors when selecting these courses.

**Faculty**

Brian Oleksak  
Chairperson, Assistant Professor  
Landscape and Horticultural Technology Department  
M.S., The Ohio State University  
B.S., The Pennsylvania State University  
LHT 104 973-328-5363 boleksak@ccm.edu

Craig Tolley  
Assistant Professor, Landscape and Horticultural Technology  
M.S., Rutgers University  
B.S., Cook College, Rutgers University  
LHT 103 973-328-2480 ctolley@ccm.edu

**Courses**

LHT-101. Introduction to Turf Management. 3 Credits.  
LECT 2 hrs., LAB 3 hrs.  
Intended to provide students with the skills needed to professionally manage turf facilities including golf courses, recreational and athletic fields. Topics include turf establishment and reseeding, turf management, turf maintenance, irrigation, control of turf pests and maintenance of turf areas. This course may be eligible for New Jersey Pesticide Recertification Credits in both core and selected categories. This course is offered as a traditional face-to-face course or as a hybrid online course. The face-to-face course also has an online supplement.  
Additional Fees: Course fee applies.

LHT-108. Herbaceous Plant Materials. 3 Credits.  
LECT 2 hrs., LAB 3 hrs.  
Teaches field identification techniques for herbaceous plants including annuals, biennials and perennials. The installation, selection and uses of herbaceous plants in a landscape, maintenance of herbaceous plants, and the selection of tools and equipment in the maintenance of herbaceous landscape plants are also included. This course is offered as a face-to-face course with an online supplement and also as a hybrid course.  
Additional Fees: Course fee applies.

LHT-110. Plant Science. 3 Credits.  
LECT 2 hrs., LAB 3 hrs.  
Plant Science includes studying the effects of the environment on plant growth and development, plant morphology and physiology, and plant classification. Students apply theory by propagating, maintaining and studying plants using the Landscape and Horticultural Technology program greenhouse facility. This course is offered as a traditional face-to-face course with an online supplement, as an online course or as a hybrid online course.  
Additional Fees: Course fee applies.
LHT-111. Introduction to Horticulture. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Plant production, plant propagation, greenhouse management and marketing of bedding plants represent the major topics of study. Students apply classroom theory by producing both annual and perennial plants from seed, cuttings and division. Commercial production techniques are emphasized, including professional greenhouse management. This course is offered as a traditional face-to-face course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.

LHT-114. Landscape Plant Identification, Management and Use. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course focuses on field identification techniques applied to the study of woody plant material including trees, shrubs, groundcovers and vines. Both conifer and deciduous plants are covered. The landscape uses of plants and the factors which should be used to guide plant selection are also discussed. Over 100 species of woody plant material are studied including trees, shrubs, vines and groundcovers. The County College of Morris campus, local garden centers and arboreta of the Morris County Park Commission are all used for field study. This course is offered as a traditional face-to-face course, as an online course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.

LHT-115. Horticultural Computer Software Applications. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Improves technical literacy by familiarizing students with the most effective ways to use the computer as a tool for online research, landscape design, landscape imaging and digital presentation development. Computer-assisted drafting is a major focus, and students also are introduced to GPS and GIS technology applications in agriculture. Students are provided with the opportunity to achieve competence in the selection and use of horticultural computer software. This course includes an online supplement and also offers students the opportunity to lease or purchase landscape design software at a significant discount.
Additional Fees: Course fee applies.

LHT-116. Horticultural Soils. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
The origin, composition and management of soils, including study of the physical and chemical properties with emphasis on ion exchange processes, soil classification, soil amendments and biological processes that occur in the soil. The lab provides students with the opportunity to learn how to analyze and evaluate soil productivity including nutrient and pH levels as well as texture and structure. The emphasis throughout the course is on the development of problem-solving abilities which can be applied to field work. Students are required to complete a semester project which requires that they analyze the suitability of soils in an assigned area. This course is offered as a face-to-face course which includes an online supplement or as a hybrid online course.
Additional Fees: Course fee applies.

LHT-124. Grounds Maintenance and Development. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides students with the skills needed to professionally manage exterior environments. Topics include turf and landscape plant management, irrigation, control of landscape pests, winter property management and maintenance of landscape construction features as well as the maintenance of grounds equipment. This course is offered as a face-to-face course with an online supplement and as a hybrid course.
Additional Fees: Course fee applies.

LHT-211. Landscape Design and Planning I. 3 Credits.
LECT 1 hr., LAB 6 hrs.
Class instruction emphasizes the theory, principles and practices of design and planning, effective use of plant materials, artistic consideration of form and function, and basic drawing and drafting techniques. Students learn to apply the design process as a problem-solving technique to produce finished designs. The process of design is a major focus and students are also taught presentation techniques. Sustainable practices are infused throughout the course. This course is offered as a face-to-face course with an online supplement or as a hybrid online course. Student project work is posted online using a free online portfolio system.
Prerequisites: LHT-114 or permission of department chair
Additional Fees: Course fee applies.

LHT-212. Landscape Design and Planning II. 3 Credits.
LECT 1 hr., LAB 6 hrs.
A continuation of Landscape Design and Planning I. Class instruction focuses on problem-solving for difficult sites, including designing for slopes, sustainability, landscape lighting design, cultural influences on design and specialty garden design. Cost estimation, presentation skills and GPS applications are also covered. This course is offered as a face-to-face course with an online supplement or as a hybrid online course.
Prerequisites: LHT-211 or permission of department chair
Additional Fees: Course fee applies.

LHT-215. Plant Pest Management. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Teaches insects, diseases and weeds that are recognized as pests of ornamental plant materials and turf areas. The nature, structure and function of insect body parts, and the growth, habits, injurious effects and life cycles of pest organisms are studied in detail. Pesticides, regulations governing pesticide use and methods of selection and application are discussed with an emphasis on safety. Integrated Pest Management (IPM) techniques are stressed and students apply an understanding of IPM techniques to both greenhouse and landscape management. This course may be eligible for New Jersey Pesticide Recertification credits in both core and selected categories. This course is offered as a face-to-face course with an online supplement and as either a hybrid or online course.
Prerequisites: LHT-110 or LHT-111 or permission of department chair
Additional Fees: Course fee applies.
LHT-231. Landscape Construction and Equipment. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Course emphasizes state-of-the-art landscape construction and installation techniques, surveying techniques and the safe operation and maintenance of landscaping equipment. Utilizing the well-equipped Landscape and Horticultural Technology facility, this course provides the student with extensive hands-on instruction in hardscape installation and also focuses on teaching students the value of professional certification programs. This course is offered as a face-to-face course with an online supplement and as a hybrid online course.
**Additional Fees:** Course fee applies.

LHT-233. Cooperative Agricultural Experience. 3 Credits.
COOP 3 hrs.
Recognizing that hands-on, real-work experience is invaluable to LHT students, this course provides students enrolled in the Landscape and Horticultural Technology program with on-the-job training and work experience prior to graduation. In order to successfully complete this course, students must be employed within the landscape or horticultural profession and satisfactorily complete a minimum of 300 hours on the job. Students must have minimum 2.0 GPA and completion of 25 credits in Agribusiness, Landscape Management and Design or Turf and Turfgrass Management programs to be eligible to enroll.
**Prerequisites:** Permission of department chair.

LHT-234. Landscape and Turf Installation. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is intended to provide students with the skills and knowledge needed to succeed as landscape and turf installers and managers. Skills developed include surveying, understanding grading and drainage, and installation techniques for both landscape plants and turf. This course may be eligible for New Jersey Pesticide Recertification credits in both core and selected categories. This course is offered as a face-to-face course with online enhancements and as a hybrid online course.
**Prerequisites:** LHT-101 or LHT-110 or LHT-111 or LHT-124 or permission of department chair
**Additional Fees:** Course fee applies.

LHT-235. Irrigation Systems. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is intended to provide the student with a general understanding of the components, use and function of irrigation systems. By completion of this course, the students are able to operate, maintain and repair irrigation systems. This course is offered as a face-to-face course with an online supplement or as a hybrid course.
**Additional Fees:** Course fee applies.

LHT-291. Special Topics in Agriculture I. 3 Credits.
LECT 3 hrs.
This course is an independent study course which involves students in an individualized course of study designed to fit each student's program of study and career goals. There is an online supplement for this course.
**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

LHT-292. Special Topics in Agriculture II. 3 Credits.
LECT 3 hrs.
This course is the second independent study course of a two semester sequence which involves students in an individualized course of study designed to fit each student's program of study and career goals. There is an online supplement for this course.
**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.
Languages

County College of Morris offers twelve languages that count towards a student’s graduation requirements: American Sign Language, Arabic, Chinese, French, German, Hebrew, Italian, Japanese, Latin, Portuguese, Russian and Spanish. We do not currently offer a major in any languages, but the College does offer a major in Spanish Education (p. 202) under the Psychology and Education Department.

Additional information about the Foreign Language Requirement:

- Students may also fulfill their language requirement through a departmental examination in the languages we offer. Permission from the chairperson is required.
- Students who have passed the Chinese, French, German, Italian or Spanish AP test with scores of 4 or 5 receive 6 credits in the language. A score of 3 grants 3 credits. A score lower than 3 does not grant any language credits.
- Students who have taken CLEP tests through a recognized testing center can apply to obtain credits towards a degree at CCM. No other tests will be accepted to grant language credits at CCM.
- Native speakers of one of the languages offered may only enroll in advanced courses of that language to fulfill an elective requirement or to fulfill the Spanish Teaching program requirements.
- A student who has taken two or more years of a language in high school within the last three years may not enroll in the elementary level “111” of a language. ASL students with one year of high school ASL should register for ASL 112 or higher. Placement may be determined by an on-campus evaluation by an advisor.

For more details, visit the Languages and ESL Department website (http://www.ccm.edu/academics/divdep/liberalarts/languages/languages.aspx).

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Courses

ARA-111. Elementary Arabic I. 3 Credits.
LECT 3 hrs.
This course is designed for students with little or no prior knowledge of Arabic. Coursework combines the use of a textbook and other relevant and authentic materials for writing, reading, speaking and listening comprehension. By the end of the course, students are expected to master the writing and sound systems of Arabic, understand and use basic grammatical structures, have use of basic vocabulary words, comprehend short reading passages and understand simple utterances. Not intended for native speakers.

ARA-112. Elementary Arabic II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Arabic expand their study of basic Arabic script, pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes root consonants and word shapes, word order and agreement, plural and agreement of adjectives, dual nouns, pronouns, verbs and adjectives, and the past tense. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Arabic language proficiency. The cultural context of the language is also covered.
Prerequisites: ARA-111 or permission of department chair.

ARA-211. Intermediate Arabic I. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Arabic expand their study of basic Arabic script, pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes root consonants and word shapes, word order and agreement, plural and agreement of adjectives, dual nouns, pronouns, verbs and adjectives, and the past tense. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Arabic language proficiency. The cultural context of the language is also covered.
Prerequisites: ARA-111 or permission of department chair.

ARA-211. Intermediate Arabic II. 3 Credits.
LECT 3 hrs.
This course briefly reviews the grammar covered in Elementary Arabic II. It expands the Arabic vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Arabic language.
Prerequisites: ARA-112 or permission of department chair.

ASL-111. American Sign Language I. 3 Credits.
LECT 3 hrs.
This course is an introduction to the expressive and receptive skills required for communication in American Sign Language (ASL). Through active class use of basic vocabulary, grammar and syntax, students will begin exploration of deaf culture and begin to learn the language of that culture. This course is not intended for students with more than one year of previous study of this language at the high school level.
ASL-112. American Sign Language II. 3 Credits.
LECT 3 hrs.
This course is a continuation to the basic expressive and receptive skills required for communication in American Sign Language (ASL). Through active class use of basic vocabulary, grammar, and syntax, students begin the exploration of Deaf culture and begin to learn the language of that culture. Students will be better informed about the appropriate course of action when encountering or assisting deaf individuals in our community. Students are expected to search the Internet to watch, evaluate and gather information from different modalities of ASL conversation. This course is not intended for students with more than two years of previous study of this language.
Prerequisites: ASL-111 or permission of department chair.

ASL-211. Intermediate American Sign Language I. 3 Credits.
LECT 3 hrs.
Intermediate American Sign Language I expands the students' vocabulary and enhances their expressive and receptive skills through class discussions, pair/group work, simulations and presentations. The course is conducted mostly in American Sign Language. It also features extensive discussions of Deaf culture and requires students to write a paper on one of the topics discussed including ethical issues as accommodations and inclusion/exclusion in mainstream society. Students are expected to conduct research not only for this paper, but also for their final presentation. This course is not intended for students with three or more years of previous study of this language.
Prerequisites: ASL-112.

ASL-212. Intermediate American Sign Language II. 3 Credits.
LECT 3 hrs.
Intermediate American Sign Language II further expands the students' vocabulary and enhances their expressive and receptive skills through class discussions, pair/group work, simulations, and presentations. This course is intended to build upon students' knowledge of the rules of ASL, including discourse markers, personal narratives, dynamic equivalencies, non-manual grammar, syntax, classifiers, temporalization, pronominalization, turn-taking, use of space, sentence structure and types, and gesture. This course will also include lessons on Deaf culture, history, and literature. The course is conducted mostly in American Sign Language. It also features extensive discussions of Deaf culture and requires students to research on-line and write a paper on one of the topics discussed including accommodations, and inclusion/exclusion in mainstream society. Students are also expected to conduct research for their final presentation. This course is not recommended for students with four or more years of previous study of this language.
Prerequisites: ASL-211.

CHI-111. Elementary Chinese I. 3 Credits.
LECT 3 hrs.
This course is intended for students with no prior knowledge of, or with limited background in the language. Emphasis is on the fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. Students learn Mandarin Chinese using "pinyin" romanization and are introduced to simplified and traditional characters. Not for native speakers and not intended for students with two or more years of high school Chinese.

CHI-112. Elementary Chinese II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Chinese expand their abilities in speaking, reading and writing Chinese. Students develop a better usage of the Chinese language, characters and patterns.
Prerequisites: CHI-111 or permission of department chair.

CHI-211. Intermediate Chinese I. 3 Credits.
LECT 3 hrs.
This course is a continuation of Elementary Chinese II. It expands the Chinese vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Chinese language. To that end, students are introduced to simple versions of Chinese literature.
Prerequisites: CHI-112 or permission of department chair.

CHI-212. Intermediate Chinese II. 3 Credits.
LECT 3 hrs.
This course is a continuation of Intermediate Chinese I. It expands the Chinese vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Chinese language. Students are introduced to basic Chinese literature and philosophy along with advanced grammatical patterns.
Prerequisites: CHI-211 or permission of department chair.

CHI-291. Special Topics in Chinese I. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Chinese language or culture. Topics may differ each time the course is offered. Students should contact the department chair for further information.
Prerequisites: An advanced course in Chinese or permission of department chair.

CHI-292. Special Topics in Chinese II. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Chinese language or culture. Topics may differ each time the course is offered. Students should contact the department chair for further information.
Prerequisites: An advanced course in Chinese or permission of department chair.

FRE-111. Elementary French I. 3 Credits.
LECT 3 hrs.
Not for students with two or more years of high school French. See department chair. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar.

FRE-112. Elementary French II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of French expand their study of basic French pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes possessive and demonstrative adjectives, partitive articles, the verb aller and le futur proche, -re verbs, common irregular verbs in the present tense, the imperative and the past tense. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance French language proficiency. The cultural context of the language is also covered.
Prerequisites: FRE-111 or permission of department chair.
FRE-211. Intermediate French I. 3 Credits.
LECT 3 hrs.
This course is intended for students whose study of the first year of French is recent and who wish to acquire new skills in the language. It includes the introduction of new grammatical concepts such as affirmative and negative pronouns, the imperfect tense, direct and indirect object pronouns, agreement with past participles, adverbs, the pronouns y and en, and additional verbs with irregular forms. Higher emphasis is given to conversation. Some compositions are required.
Prerequisites: FRE-112 or permission of department chair.

FRE-212. Intermediate French II. 3 Credits.
LECT 3 hrs.
This course expands the French vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate to advanced knowledge of French. The grammatical concepts presented in the course include, but are not limited to, the future and conditional tenses, the subjunctive mood, indefinite pronouns and adjectives, relative pronouns, and the comparative and superlative of adjectives. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance French language proficiency. The cultural context of the language is also covered. A few readings from modern French literature and compositions on cultural subjects are required.
Prerequisites: FRE-211 or permission of department chair.

FRE-221. French Conversation and Literature I. 3 Credits.
LECT 3 hrs.
Intensive practice in speaking French. Oral and written reports and discussions based on readings from literature in French.
Prerequisites: FRE-212 or permission of department chair.

FRE-222. French Conversation and Literature II. 3 Credits.
LECT 3 hrs.
This course focuses on highly advanced vocabulary and sentence structure for both everyday and academic French. Oral and written reports and discussions based on advanced readings from literature in French.
Prerequisites: FRE-221 or permission of department chair.

FRE-291. Special Topics in French. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in French. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in French or permission of department chair.

FRE-292. Special Topics in French. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in French. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in French or permission of department chair.

GER-111. Elementary German I. 3 Credits.
LECT 3 hrs.
Not intended for students with two or more years of high school German. See department chair. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar.
Prerequisites: GER-112 or permission of department chair.

GER-211. Intermediate German I. 3 Credits.
LECT 3 hrs.
This course is intended for students whose study of the first year of this language is recent and who wish to acquire new skills in the language. It includes a continuation of grammar. Higher emphasis is given to conversation. Some compositions are required.
Prerequisites: GER-112 or permission of department chair.

GER-212. Intermediate German II. 3 Credits.
LECT 3 hrs.
This course expands the German vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the German language. Grammar study includes past perfect and pluperfect tenses, declension of adjectives, subjunctive mood and conjunctions. Course work involves conversation and readings from modern German literature and the writing of compositions. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance German language proficiency. The cultural context of the language is also covered.
Prerequisites: GER-211 or permission of department chair.

GER-221. German Conversation and Literature I. 3 Credits.
LECT 3 hrs.
Intensive practice in speaking everyday German. Oral and written reports and discussions based on readings from German literature are incorporated.
Prerequisites: GER-222 or permission of department chair.

GER-222. German Conversation and Literature II. 3 Credits.
LECT 3 hrs.
This course focuses on highly advanced vocabulary and sentence structure for both contemporary and academic German. Oral and written reports and discussions based on advanced readings from German literature are incorporated.
Prerequisites: GER-221 or permission of department chair.

GER-291. Special Topics in German. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in German. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in German or permission of department chair.
GER-292. Special Topics in German. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in German. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in German or permission of department chair.

HBR-111. Elementary Modern Hebrew I. 3 Credits.
LECT 3 hrs.
Not intended for native speakers. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. The cultural context of the language is also explored.

HBR-112. Elementary Modern Hebrew II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Hebrew expand their study of basic Hebrew script, pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes future tense, commands, the infinitive, declension of direct object pronouns, regular and irregular verbs. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Hebrew language proficiency. The cultural context of the language is also explored.
Prerequisites: HBR-111 or permission of department chair.

JPN-111. Elementary Japanese I. 3 Credits.
LECT 3 hrs.
Not intended for students with two or more years of high school Japanese. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. Kana writing system and some Kanji writing characters are introduced at this stage.

JPN-112. Elementary Japanese II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Japanese expand their study of basic Japanese language, script, pronunciation, vocabulary and grammar of an elementary nature. Grammar includes study of basic syntactical structures. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Japanese language proficiency. The cultural context of the language is also covered. At least 56 Kanji characters are introduced at this stage.
Prerequisites: JPN-111 or permission of department chair.

JPN-211. Intermediate Japanese I. 3 Credits.
LECT 3 hrs.
The course is intended for students whose study of the first year of this language is recent and who wish to hone their skills. Students continue to study Kanji characters. Emphasis is given to vocabulary, grammar, listening, speaking, reading and writing in an effort to enhance Japanese language proficiency. Some readings and compositions on cultural subjects are included.
Prerequisites: JPN-112 or permission of department chair.

JPN-212. Intermediate Japanese II. 3 Credits.
LECT 3 hrs.
This course expands the Japanese vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Japanese language. Students continue to learn more Kanji characters. Vocabulary and grammar support listening, reading and writing in an effort to enhance Japanese language proficiency. The cultural context of the language is also covered. Some readings and compositions on cultural subjects are included.
Prerequisites: JPN-211 or permission of department chair.

LAT-111. Elementary Latin I. 3 Credits.
LECT 3 hrs.
Not intended for students with two or more years of high school Latin. This course is intended for students with no prior knowledge of, or with limited background in, the language. It includes basic grammar and vocabulary, selected readings with stress on syntax, and the relationship of Latin grammar to English grammar.

LAT-112. Elementary Latin II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Latin expand their study of basic Latin vocabulary and grammar of an elementary nature. Grammar study includes third and fourth conjugation and third and fourth declension, pluperfect and future tenses, and the ablative case. Vocabulary and grammar support readings with stress on syntax, and the relationship of Latin grammar to English grammar.
Prerequisites: LAT-111 or permission of department chair.

PTG-111. Elementary Portuguese I. 3 Credits.
LECT 3 hrs.
Not for native speakers. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary, basic cultural knowledge and the essentials of grammar including present tense verbs. Both Brazilian and European Portuguese modalities are introduced.

PTG-112. Elementary Portuguese II. 3 Credits.
LECT 3 hrs.
This course is intended for students with one semester of elementary college-level Portuguese or with limited background in the language. Emphasis is given to fundamentals of conversation, reading and writing. The course includes practice in pronunciation, basic vocabulary, basic cultural knowledge and the essentials of grammar. Past tenses are studied to express both completed and ongoing past events.
Prerequisites: PTG-111 or permission of department chair.
PTG-211. Intermediate Portuguese I. 3 Credits.
LECT 3 hrs.
This course is a continuation of Portuguese grammar at the intermediate level. Students continue to hone their conversational, reading and writing skills in the language. Students are introduced to the imperative and subjunctive mood of verbs. The course includes a brief review of grammar and students learn to use reflexive verbs, express commands, and express opinions in the language. Both Brazilian and European Portuguese modalities are explored. The course also includes a variety of cultural, social and political realities of the entire and diverse Portuguese-speaking world, in particular those of Brazil and Portugal. The students will be exposed to everyday "real-life" situations, practical vocabulary and more specific grammar.
Prerequisites: PTG-112 or permission of department chair.

RUS-111. Elementary Russian I. 3 Credits.
LECT 3 hrs.
Not for native speakers. See department chair. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated.

RUS-112. Elementary Russian II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Russian expand their study of basic Russian pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes imperative words, dative, accusative, and prepositional cases, plural of nouns and demonstrative pronouns. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Russian language proficiency. The cultural context of the language is also covered.
Prerequisites: RUS-111 or permission of department chair.

SPN-111. Elementary Spanish I. 3 Credits.
LECT 3 hrs.
This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. Not for students with two or more years of high school Spanish. See department chair. Not for native speakers, that is, not for speakers that grew up and/or studied in a Spanish-speaking country.
Prerequisites: SPN-111 or permission of department chair.

SPN-112. Elementary Spanish II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Spanish expand their study of basic Spanish pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes past tenses, the present progressive tense, the verb gustar, direct and indirect object pronouns, adjectives, reflexive verbs, and prepositions. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Spanish language proficiency. The cultural context of the language is also covered.
Prerequisites: SPN-111 or permission of department chair.

SPN-211. Intermediate Spanish I. 3 Credits.
LECT 3 hrs.
The course is intended for students whose study of the first year of this language is recent and who wish to hone their skills. It includes a continuation of grammar, conversation and some compositions on cultural subjects. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Spanish language proficiency. The cultural context of the language is also covered.
Prerequisites: SPN-112 or permission of department chair.

SPN-212. Intermediate Spanish II. 3 Credits.
LECT 3 hrs.
The course is intended for students to attain intermediate to advanced skills. It includes a continuation of grammar and conversation. Readings from Spanish literature and compositions are required. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Spanish language proficiency. The cultural context of the language is also covered.
Prerequisites: SPN-211 or permission of department chair.

SPN-218. Advanced Spanish Conversation. 3 Credits.
LECT 3 hrs.
Advanced Spanish Conversation instructs students conversant in Spanish in the correct and appropriate vocabulary, grammar and syntax for accurate spoken communication. Students deepen their understanding of idiomatic usage of the several Spanish-speaking countries through discussion of the varied themes explored by contemporary writers in short stories and other non-fiction readings, as well as consider shades of meaning inherent in their own syntactical and lexical choices. The varied readings and the interchange of ideas among the expected population of both American and Hispanic students support the cultural context of the language - the history, literature and art of the Hispanic people, and provide insight into the various ethnic and racial populations within each Spanish-speaking country and in the United States.
Prerequisites: SPN-212 or permission of department chair.
SPN-219. Advanced Spanish Composition. 3 Credits.
LECT 3 hrs.
Advanced Spanish Composition focuses on correct and appropriate written forms of communication in Spanish. The expository and argumentative essays are studied along with other special types of formal and informal writing. Students review spelling, syntax and grammar, and are expected to conduct extensive conversation in Spanish to elicit topics for writing projects. This course helps English speakers to develop new structures in Spanish syntax and understand to a greater extent aspects of Hispanic culture embodied in written forms. It also increases the knowledge of written structures of native speakers and expands their understanding of formal written language. Classes for this course are conducted entirely in Spanish. 
**Prerequisites:** SPN-212 or permission of department chair.

SPN-220. Spanish Literature. 3 Credits.
LECT 3 hrs.
This course provides a historical and critical overview of Spanish Peninsular literature beginning with the Middle Ages and ending in the present. Among the literary periods to be covered are the Renaissance, the Baroque period, the Enlightenment, Romanticism, Realism, the Generations of 1898 and 1927, and post-Spanish Civil War, Don Juan Manuel, Garcilaso de la Vega, Santa Teresa de Jesus, Cervantes, Lope de Vega, Becquer, Perez Galdos, Unamuno, Machado, Lorca, Cela, Ana Maria Matute, and Carmen Martin Gaite. This course is conducted entirely in Spanish. 
**Prerequisites:** SPN-212 or permission of department chair.

SPN-223. Survey of Latin American Literature: Pre-Columbian to the Present. 3 Credits.
LECT 3 hrs.
This course provides a historical and critical overview of Latin American literature beginning with pre-Columbian myths and poetry, and continuing through the literature of the conquest and the colonies, independence, Romanticism, Modernism, Postmodernism, the mid-twentieth century "Boom" and the Post-Boom on up to the present. Major writers may include Hernán Cortés, Sor Juana Inés de la Cruz, Darío, Martí, Neruda, Paz, García Márquez, Poniatowska, Valenzuela and Allende. The course is conducted entirely in Spanish. 
**Prerequisites:** SPN-212 or permission of department chair.

SPN-291. Special Topics in Spanish. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Spanish. Topics may differ each time the course is offered. Students should consult the department chair for further information. 
**Prerequisites:** An advanced course in Spanish or permission of department chair.

SPN-292. Special Topics in Spanish. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Spanish. Topics may differ each time the course is offered. Students should consult the department chair for further information. 
**Prerequisites:** An advanced course in Spanish or permission of department chair.
Mechanical Engineering Technology

Associate in Applied Science Degree

The Mechanical Engineering Technology program is a two-year career-oriented curriculum preparing students for positions as engineering technicians in the design, production and testing of machines, tools and manufactured products. Job activities center on technical problem solving and the practical application of engineering knowledge.

The specific educational objectives of the Mechanical Engineering Technology program are to:

1. produce graduates who are employed and operate effectively in positions that lie between those of the skilled craftsperson and those of the graduate mechanical engineer, including such positions as mechanical designer, engineering assistant, quality assurance technician, manufacturing engineering assistant and technical sales person
2. produce graduates who can successfully transfer and complete a baccalaureate degree program in mechanical engineering technology

After obtaining an Associate in Applied Science degree, it is possible to continue at a four-year college and to complete a Bachelor of Science degree in Engineering Technology. No prior mechanical design experience is necessary to enter the Mechanical Engineering Technology program. Core technology courses are sequenced along with applied mathematics and science to develop a broad background in the field of mechanical technology. Each engineering technology course contains a laboratory, which utilizes modern test instruments and applies classroom theory to practical applications. Cooperative Education, a work-study program with local firms, is available. The Mechanical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET. You can find out more at the ABET website (http://www.abet.org).

Articulation Agreements

An existing agreement with New Jersey Institute of Technology (NJIT) provides students in this program with a local transfer opportunity. Students should check with the Transfer Office about other articulation agreements with this program.

For more information, visit the Mechanical Engineering Technology website (http://www.ccm.edu/academics/degrees/mechengineering.aspx).

Degrees

AAS Mechanical Engineering Technology

(P3700)

General Education Foundation

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General Education Foundation Credits: 20

Mechanical Engineering Core

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<td>MEC-118</td>
<td>Computer Integrated Manufacturing (CIM)</td>
<td>2</td>
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<tr>
<td>MEC-110</td>
<td>Materials for Engineering Technology</td>
<td>4</td>
</tr>
<tr>
<td>MEC-141</td>
<td>Strength of Materials for Technology</td>
<td>3</td>
</tr>
<tr>
<td>MEC-204</td>
<td>Dynamics for Technology</td>
<td>2</td>
</tr>
<tr>
<td>MEC-236</td>
<td>Machine Design</td>
<td>4</td>
</tr>
<tr>
<td>ELT-201</td>
<td>Electricity and Electronics</td>
<td>4</td>
</tr>
<tr>
<td>PHY-111</td>
<td>Technical Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHY-112</td>
<td>Technical Physics II</td>
<td>4</td>
</tr>
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<td>Materials for Engineering Technology</td>
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</tr>
<tr>
<td>PHY-112</td>
<td>Technical Physics II</td>
<td>4</td>
</tr>
</tbody>
</table>

Mechanical Engineering Core Credits: 45

Total Credits: 65

Certificates

Computer-Aided Drafting Technology Certificate

(P5710)

All manufacturing industry, research and development organizations, and design divisions of major corporations use drafters in the preparation of various stages of formal drawings. Typically companies that hire engineers, architects or designers have a need for people skilled in drafting.

This certificate program is designed to prepare students for entry-level positions as junior drafters, drafter trainees or drafters using computer-aided drafting (CAD). The supportive technical course work in manufacturing, materials, science, mathematics and writing assists students in continuing to advance their careers and strengthens the background of those desiring to continue their education.

Normally, students complete 29 hours of credit course work and 3 hours of non-credit mathematics to earn the certificate. However, students with strong backgrounds in mathematics may elect to take a credit course, MAT-110 College Algebra, in place of the non-credit MAT-016 Intermediate Algebra course with the approval of their
academic advisor. Depending on the courses taken, students who successfully complete this program may receive one semester or more of credit toward a Mechanical Engineering Technology degree.

Communications
ENG-111 English Composition I 3

Mathematics and Science
Select one of the following: N3 - 3
  MAT-016 Intermediate Algebra 3
  MAT-110 College Algebra 3
  PHY-103 Concepts of Physics 1 4
  or PHY-111 Technical Physics I 3

Specialized Courses
ENR-103 Basic Engineering Graphics I 1
ENR-117 Computer-Aided Drafting I 2
ENR-118 Computer-Aided Drafting II 2
ENR-119 Technical Computer Applications 1
ENR-124 Instrumentation and Measurements 2
MEC-110 Materials for Engineering Technology 4
MEC-117 Mechanical Prototyping 2
MEC-118 Computer Integrated Manufacturing (CIM) 2
ELT-210 Electronic Fabrication 1

Technical Elective 1 3-4

Total Credits 27-31

1 Students should consult their academic advisors when selecting these courses.

Certificates of Achievement
• Advanced Mechanical Analysis - A Certificate of Achievement within Mechanical Engineering Technology (p. 136)
• Assembly and Testing - A Certificate of Achievement within Mechanical Engineering Technology (p. 136)
• Engineering Technology - A Certificate of Achievement within Mechanical Engineering Technology (p. 136)
• Mechanical CAD - A Certificate of Achievement within Mechanical Engineering Technology (p. 137)

Advanced Mechanical Analysis
A Certificate of Achievement within Mechanical Engineering Technology (P0635)
The Advanced Mechanical Analysis Certificate is designed for present or future professionals who seek to improve their technical knowledge and skills in certain areas. The certificate is balanced with theory and hands-on experience. This certificate provides an advanced introduction to theories and techniques used in mechanical and structural analysis. It’s possible to complete the certificate within a year and the courses fully transfer to the AAS degree in Mechanical Engineering Technology.

MAT-110 College Algebra 3
MEC-104 Statics 3

MEC-110 Materials for Engineering Technology 3
MEC-236 Machine Design 4

Total Credits 13

Assembly and Testing
A Certificate of Achievement within Mechanical Engineering Technology (P0627)
The Assembly and Testing Certificate of Achievement is designed for present or future professionals who seek to improve their technical knowledge and skills in certain areas. The certificate is balanced with theory and hands-on experience. This certificate provides an introduction to applications used in the assembly and testing of electronic equipment. It’s possible to complete the certificate within a year and the courses fully transfer to the AAS degree in Electronics Engineering Technology.

ENR-117 Computer-Aided Drafting I 2
ENR-119 Technical Computer Applications 1
ENR-124 Instrumentation and Measurements 2
ELT-110 Digital Principles 3
ELT-210 Electronic Fabrication 1
MAT-016 Intermediate Algebra (or test into a higher level N3 Math class) 3

Total Credits 9

Engineering Technology
A Certificate of Achievement within Mechanical Engineering Technology (P0633)
The Engineering Technology Certificate of Achievement is designed for present or future professionals who seek to improve their technical knowledge and skills in certain areas. The certificate is balanced with theory and hands-on experience. This certificate provides a strong foundation in both electronic and mechanical theories and applications. It’s possible to complete the certificate within a year and the courses fully transfer to the Electronics Engineering Technology and Mechanical Engineering Technology degrees.

Select 14 credits from the following: 14

MEC-110 Materials for Engineering Technology
MEC-117 Mechanical Prototyping
MEC-118 Computer Integrated Manufacturing (CIM)
ELT-110 Digital Principles
ELT-115 Active Circuit Components
ELT-201 Electricity and Electronics
ELT-210 Electronic Fabrication
ENR-117 Computer-Aided Drafting I
ENR-124 Instrumentation and Measurements

Total Credits 14
Mechanical CAD
A Certificate of Achievement within Mechanical Engineering Technology

(P0625)

The Mechanical CAD Certificate of Achievement is designed for present or future professionals who seek to improve their technical knowledge and skills in certain areas. The certificate is balanced with theory and hands-on experience. This certificate provides a strong foundation in Computer Aided Drafting (CAD) and in manufacturing techniques. It's possible to complete the certificate within a year and the courses fully transfer to the CAD Certificate or the AAS degree in Mechanical Engineering Technology.

ENR-103 Basic Engineering Graphics I 1
ENR-117 Computer-Aided Drafting I 2
ENR-118 Computer-Aided Drafting II 2
ENR-119 Technical Computer Applications 1
MEC-117 Mechanical Prototyping 2
MEC-118 Computer Integrated Manufacturing (CIM) 2
Technical Elective 3
Total Credits 13

Faculty

Ian Colquhoun
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Mary Anne Wassel
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B.S., The College of New Jersey
SH 273A 973-328-5721 mwassell@ccm.edu

Courses

ENR-103. Basic Engineering Graphics I. 1 Credit.
LECT 3 hrs.

Students learn fundamentals of engineering drawing through freehand sketching. Course includes developing orthographic views including auxiliary views, dimensioning, sectioning, tolerancing, threads, fasteners, springs and assembly drawings. Course includes creation of pictorial drawings.

ENR-117. Computer-Aided Drafting I. 2 Credits.
LECT 1 hr., LAB 4 hrs.

This course is an introduction to the concepts and operation of engineering drawing preparation using CAD (computer-aided drafting). The emphasis is on how CAD can reduce drawing time and improve accuracy. Students learn to use the AutoCAD software program to prepare drawings.

Additional Fees: Course fee applies.

ENR-118. Computer-Aided Drafting II. 2 Credits.
LECT 1 hr., LAB 4 hrs.

This course is a continuation and enhancement of Computer-Aided Drafting I. Topics include prototype drawings, blocks, attributes, x-reference, grips, paper space and development of 3-dimensional solid modeling.

Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-119. Technical Computer Applications. 1 Credit.
LAB 3 hrs.

This course provides an introduction to the various technical tools available to help solve problems in the field of engineering technology. This is a hands-on laboratory course designed to provide students with experience in using scientific calculators, Windows Operating System, Microsoft Office and Internet search tools. Special emphasis is placed on the development of technical reports using Microsoft Office’s EXCEL and Word programs.

Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

ENR-120. Technical Computer Programming. 2 Credits.
LECT 2 hrs., LAB 2 hrs.

This course is an introduction to computer programming with application to engineering technology. Microcomputers are used to develop application programs in a programming language.

Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

ENR-121. Engineering Graphics. 2 Credits.
LECT 1 hr., LAB 3 hrs.

This course is an introduction to computer aided design software and hardware. Covered are geometric constructions, multiview orthographic projection, dimensioning, sectioning, auxiliary view and axonometric projection and principles of descriptive geometry. A brief introduction to solid modeling is also included. This course is intended for Engineering Science students; Engineering Technology students take ENR-117.

Prerequisites: MAT-123
Additional Fees: Course fee applies.

ENR-123. Introduction to Engineering. 1 Credit.
LECT 1 hr.

This course provides the entering engineering student with an overview of the engineering profession and the design process. Topics discussed include the engineering course of study, academic advisement and transfer processes, types of engineering disciplines, problem-solving techniques, typical software tools, reporting techniques, and study skills.

ENR-124. Instrumentation and Measurements. 2 Credits.
LECT 1 hr., LAB 3 hrs.

This course is an introductory study in the concepts involving physical measurements utilizing hands-on electrical and mechanical measurement applications. Use of basic instruments and transducers, accuracy and precision, units and standards of measurements, accounting and presentation of errors in measurements.

Prerequisites: MAT-007 or equivalent
Corequisites: ENR-119
Additional Fees: Course fee applies.
ENR-125. Computer Programming for Engineers. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
A course in structured and object-oriented programming, emphasizing engineering applications and numerical methods in assignments. Program assignments are coded and are implemented on personal computers.
Prerequisites: MAT-123
Additional Fees: Course fee applies.

ENR-126. Computer Aided Design and Applications. 2 Credits.
LECT 1 hr., LAB 4 hrs.
An introductory course in computer aided design using parametric solid modeling software. Creation of solid models of parts, generation of orthographic views, sectional views and auxiliary views are covered. Dimensioning and tolerancing of parts is emphasized along with development of appropriate files to make the parts for product development using rapid prototyping (3-D printing) and to manufacture parts using computerized numerical control machines.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-220. Hydraulics and Fluid Power. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an exploration into the relationship between pressure, density and temperature as they relate to hydraulic and pneumatic systems. Topics include hydraulic pumps, motors and air compressors. The course emphasizes use of engineering standards and specifications for circuit design and component selection. Electrical controls and application to systems are covered. Lab sessions further expand upon lectures by providing students with physical evidence to support theories and ideas acquired in class.
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ENR-222. Mechanics of Solids. 3 Credits.
LECT 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending and combined stresses and column buckling. Also covered are axial force, shear moment and torque in structural members and in statically indeterminate systems. Elementary failure theory of structures and mechanical components is discussed.
Prerequisites: ENR-223.

ENR-223. Engineering Mechanics I (Statics). 3 Credits.
LECT 3 hrs.
This course is a vector approach to statics in a plane and in three dimensions, equilibrium of particles and rigid bodies. Equivalent force systems, structural analysis, centroids and moments of inertia. Virtual work and applied engineering problems are incorporated.
Prerequisites: MAT-131 and PHY-130.

ENR-224. Engineering Mechanics II (Dynamics). 3 Credits.
LECT 3 hrs.
This course is a calculus-based course in dynamics. Kinematics and kinetics of particles and rigid bodies, Newton's laws, work, energy, impulse and momentum are covered. Practical engineering problems are incorporated.
Prerequisites: ENR-223.

ENR-230. Engineering Strength of Materials. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending, and combined stresses and column buckling. Elementary failure theory of structures and mechanical components is discussed. Laboratory covers a variety of tensile stress-strain, impact and hardness tests, as well as shear stress-strain and the techniques of report writing.
Prerequisites: ENR-223
Additional Fees: Course fee applies.

ENR-232. Materials Science. 3 Credits.
LECT 3 hrs.
This course covers the properties and structure of materials: atomic bonding, molecular, crystalline, noncrystalline structures and crystalline imperfections. It also covers metallic phases, equilibrium and nonequilibrium reactions, processing and properties of ferrous and non-ferrous metals, polymers, ceramics and composites. In addition, corrosion phenomenon is discussed.
Prerequisites: CHM-125 and CHM-126 and PHY-130.

ENR-234. Independent Study in Technology. 3 Credits.
LECT 3 hrs.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress.
Prerequisites: Permission of department chair.

ENR-235. Engineering Circuit Analysis I. 3 Credits.
LECT 3 hrs.
This first course in engineering circuit analysis covers DC circuit analysis including source transformations, mesh, nodal, superposition, Thevenin and Norton theorems, and the maximum power transfer theorem. Dependent as well as independent sources are included. Transient response of RC, RL and RLC circuits is introduced. Steady-state analysis of single and three phase AC systems is studied using phasor diagrams and the network theorems mentioned above. Real, reactive, apparent power and power factors are included. Use of the computer as a problem-solving tool is included in the course.
Prerequisites: MAT-132.

ENR-236. Engineering Circuit Analysis Laboratory I. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments in DC, AC and transients to accompany the course work in Engineering Circuit Analysis I.
Corequisites: ENR-235
Additional Fees: Course fee applies.

ENR-237. Engineering Circuit Analysis II. 3 Credits.
LECT 3 hrs.
This is a second course in engineering circuit analysis. Natural and step response of RL, RC and RLC circuits, mutual inductance, ideal transformers, series and parallel resonance are studied. Laplace transform theory is covered and includes step and impulse response in the S-domain. Bode diagrams of simple and quadratic factors are plotted and the computer is used for actual frequency and phase plots. Fourier Series are studied using both trigonometric and exponential forms.
Prerequisites: ENR-235
Corequisites: MAT-232.
ENR-238. Engineering Circuit Analysis Laboratory II. 1 Credit.
LECT 2 hrs., LAB 3 hrs.
This laboratory course includes experiments on transformers, series and parallel resonance, filters and frequency/phase response plots, and two-port hybrid models to accompany the course work in Engineering Circuit Analysis II.
Prerequisites: ENR-236
Corequisites: ENR-237
Additional Fees: Course fee applies.

ENR-240. Engineering Technology Project. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers the design of products and processes considering functional requirements, manufacturing feasibility and economy, and the use of technical literature and catalogs. Includes design layout and working drawings and group and individual projects.
Prerequisites: ENR-117 and MEC-110 and MEC-141
Additional Fees: Course fee applies.

ENR-241. Instrumentation and Control. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to the study of measuring systems and components, digital and analog signals and their characteristics. Mechanical and electromechanical transducer elements are used to measure pressure, temperature, displacement, velocity and acceleration. Static and dynamic performance of instruments, statistical analysis of experimental data are explored. A brief study of process controllers, programmable logic controllers and final control elements are also explored.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ENR-290. Special Topics in Technology. 1 Credit.
LECT 1 hr.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress when used for independent study. The course is also used to cover either current or future topics of interest in technology. Topics discussed will have relevance to either electronics technology, mechanical technology or both, and may vary each semester.
Prerequisites: Permission of department chair.

ENR-291. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ENR-292. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

MEC-104. Statics. 3 Credits.
LECT 3 hrs.
This course provides an analysis of force systems acting on particles and rigid bodies; equilibrium in two and three dimensions; trusses, frames and machines; and friction, centroids and moment of inertia of areas.
Prerequisites: MAT-110, ENR-119 and ENR-124.

MEC-110. Materials for Engineering Technology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers metallic, plastic and ceramic materials that are important to manufacturing. Topics include: molecular and microscopic structures in relationship to material properties, testing of mechanical and thermal properties with reference to ASTM standards, equilibrium diagrams and physical metallurgy emphasizing steel and aluminum, heat treatment of steel, molding and forming methods for plastics. A brief study of ceramics and composites is included.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

MEC-117. Mechanical Prototyping. 2 Credits.
LECT 1.5 hr., LAB 1.5 hr.
This course is a study of the methods of prototyping including an introduction to precision measurements, elementary theory of cutting and machining methods with emphasis on the lathe operation, milling, drilling and grinding. This course runs for eight weeks.
Additional Fees: Course fee applies.

LECT 1.5 hr., LAB 1.5 hr.
This course is a study of the methods of Computer-Aided Manufacturing (CAM) and the related field of Computerized Numerical Control (CNC). Topics include machine setup, CNC code, manual and post processed programs, rapid prototyping, tool offsets, and tool changing. This course runs for eight weeks.
Prerequisites: MEC-117 or industrial experience
Additional Fees: Course fee applies.

MEC-141. Strength of Materials for Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course studies the mathematical determination of stress and deflection for materials having applied loads of normal, shear, torsion, bending or combinations of these. The rational design of mechanical components, such as fasteners, weldments, tanks, shafts, beams and columns, to satisfy stress, deflection and stability criteria are studied. Also included are Mohr's circle and strain gauge techniques. This course is intended for Engineering Technology students: Engineering Science students should take ENR-230, Engineering Strength of Materials.
Prerequisites: MEC-104 and MAT-110
Additional Fees: Course fee applies.

MEC-155. Mechanical Components. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course develops the fundamentals of sketching, blueprint reading, dimensioning, tolerances, preferred sizes and fits, and evaluating product quality. It also introduces students to the theory of function of mechanical elements such as linkages, cam bearings, gears belt and chain drives, springs, brakes, clutches, welds, keys, fasteners and power screws.
Prerequisites: MAT-007 or equivalent.
MEC-204. Dynamics for Technology. 2 Credits.
LECT 2 hrs.
This course provides an understanding of the mathematics of the motion of particles and rigid bodies, and of the relation of forces and motion of particles. Upon successful completion of this course, students will describe the motion of particles and rigid bodies as functions of time and position, develop their equations of motions due to applied forces, and determine post impact behavior.
Prerequisites: MAT-110, MEC-104
Corequisites: PHY-111.

MEC-229. Cooperative Work Experience-Mechanical Engineering Technology. 3 Credits.
COOP 3 hrs.
Registration is only upon written recommendation of advisor. This course is a field experience in the laboratory facilities of an industrial firm. It is designed for students in the Mechanical Engineering Technology program to obtain industrial experience as a supplement to college studies prior to career employment. Seminar evaluation visitations are included. Completion of 25 technical credits required to enroll.
Prerequisites: Permission of department chair.

MEC-235. Kinematics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of moving elements as used in the design and analysis of basic mechanisms in machines. Velocity and acceleration analysis on a plane, design and analysis of 4-bar linkages, cams, gears and other mechanisms using graphical and analytical methods are studied.
Prerequisites: MAT-110
Corequisites: PHY-111
Additional Fees: Course fee applies.

MEC-236. Machine Design. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is the rational design and selection of machine elements considering their economics and manufacturability. The principles of strength of materials and mechanics are applied to the design of bearings, shafts, gears, springs, brakes and other elements of importance in mechanical systems. Consideration of service criteria, operating environment and cost. Emphasis is placed on developing a systematic design philosophy.
Prerequisites: MEC-141
Additional Fees: Course fee applies.

MEC-291. Special Topics in Mechanical Engineering Technology. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Mechanical Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Mechanical Engineering Technology.

MEC-292. Special Topics in Mechanical Engineering Technology. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Mechanical Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Mechanical Engineering Technology.
Music - Liberal Arts and Sciences

Associate in Arts Degree

These university-parallel curricula are designed to meet the basic requirements of the first two years of college programs for students who plan to graduate and transfer to a four-year college or university to study for the baccalaureate degree. The curricula offer a wide range of flexibility in terms of a student’s ultimate educational goals and provide adequate preparation for further study leading to professional competence in specialized fields.

These programs also accommodate individuals seeking two years of a liberal higher education.

The program offers options in Human Services, Humanities/ International Studies, Humanities/Music, and Humanities/Social Science.

For more information, visit the Music website. (http://www.ccm.edu/academics/degrees/music.aspx)

Degrees

AA Music

An Option within Liberal Arts and Sciences

(P1190)

The Music program includes background courses in the Humanities/ Social Sciences offered by most four-year institutions in the first and second years. It prepares students to transfer to programs in primary and secondary school music, music therapy and performance degrees. All students must pass a theory placement exam or register for MUS-011 Basic Musicianship I and MUS-176 Aural Comprehension I during the first semester.

Students must receive a grade of C or better in MUS-011 Basic Musicianship I to register for MUS-117 Music Theory I. Any student who receives a grade of D in any music core course must repeat the course and is required to see the Music department chair before registering for the next semester.


General Education Foundation

Choose from General Education course list

<table>
<thead>
<tr>
<th>Mathematics (3-8 CR)</th>
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<tbody>
<tr>
<td>Laboratory Science (4-8 CR)</td>
</tr>
<tr>
<td>Technology (0-4 CR)</td>
</tr>
<tr>
<td>Social Science 6</td>
</tr>
<tr>
<td>PSY-113 General Psychology</td>
</tr>
<tr>
<td>SOC-120 Principles of Sociology</td>
</tr>
<tr>
<td>Humanities 9</td>
</tr>
<tr>
<td>Choose 3 from the following list of Humanities-Music Electives</td>
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<tr>
<td>MUS-114 American Music</td>
</tr>
<tr>
<td>MUS-150 Jazz History and Styles</td>
</tr>
<tr>
<td>MUS-217 Music History and Literature to 1750</td>
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<tr>
<td>MUS-218 Music History and Literature From 1750</td>
</tr>
<tr>
<td>MUS-248 Enjoyment of Music</td>
</tr>
<tr>
<td>MUS-258 Contemporary Music: 20th-21st Century</td>
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<tr>
<td>Note: MUS-143 World Music and Culture, and MUS-163 Rock History and Culture are also considered Music Humanities courses but cannot be used as both the Humanities and Diversity credit requirement.</td>
</tr>
<tr>
<td>History 6</td>
</tr>
<tr>
<td>*Please refer to the #1190 Curriculum Check Sheet for specific History choices.</td>
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<tr>
<td>Diversity 3</td>
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<tr>
<td>Choose one of the following:</td>
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<tr>
<td>MUS-143 World Music and Culture</td>
</tr>
<tr>
<td>MUS-163 Rock Hist. &amp; Culture</td>
</tr>
<tr>
<td>General Education Foundation Credits 45</td>
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</table>

Musical Core

*Please Note: Music Theory, Applied Music Primary, and Applied Music Secondary are co-requisites and must be taken together.

| MUS-117 Music Theory I 3 |
| MUS-118 Music Theory II 3 |
| MUS-215 Music Theory III 3 |
| MUS-216 Music Theory IV 3 |
| Note: Students must be registered for at least 6 Music credits in order to enroll in Applied Music Primary I - IV. |
| MUS-135 Applied Music Primary I 1 |
| MUS-136 Applied Music Primary II 1 |
| MUS-137 Applied Music Primary III 1 |
| MUS-138 Applied Music Primary IV 1 |
| Select one of the following sequences (Note: All music majors must register for Applied Music Secondary Piano I - IV unless their primary instrument is piano in which case students must register for Applied Music Secondary Voice I - IV) |
| MUS-125 Applied Music Secondary-Piano I 1 |
| or MUS-109 Applied Music Secondary-Voice I |
| MUS-126 Applied Music Secondary-Piano II 1 |
| or MUS-110 Applied Music Secondary-Voice II |
| MUS-225 Applied Music Secondary-Piano III 1 |
| or MUS-209 Applied Music Secondary-Voice III |
| MUS-226 Applied Music Secondary - Piano IV 1 |

| Communication 9 |
| ENG-111 English Composition I |
| ENG-112 English Composition II |
| COM-109 Speech Fundamentals |

| Math-Science-Technology 12 |
or MUS-210  Applied Music Secondary-Voice IV
Ensemble

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<td>MUS-145</td>
<td>Chamber Choir I</td>
<td>1</td>
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<tr>
<td>MUS-146</td>
<td>Chamber Choir II</td>
<td>1</td>
</tr>
<tr>
<td>MUS-147</td>
<td>Chamber Choir III</td>
<td>1</td>
</tr>
</tbody>
</table>

Musical Core Credits 23

Total Credits 68

Faculty

Marielaine R. Mammon
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A.A., South Plains College
A.A.S., South Plains College
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Dr. Richard Gradone
Professor, Music
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M.A., The Catholic University of America
B.M. Manhattan School of Music
DH 255 973-328-5433 rgradone@ccm.edu

Courses

MUS-011. Basic Musicianship I. 3 Credits.
LECT 3 hrs.
A pre-music theory course designed to develop reading skills through keyboard, sight-singing and ear-training. This course may not be used as a curriculum requirement for any major. Students must pass this course or an equivalent Music Theory placement exam to register for MUS-117 Theory I.

MUS-101. Chorus I. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-102. Chorus II. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-103. Chorus III. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-104. Chorus IV. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading. **Prerequisites:** Permission of department chair.

MUS-110. Applied Music Secondary-Voice II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading. **Prerequisites:** MUS-109.

MUS-112. Introduction to Electronic Music. 3 Credits.
LECT 3 hrs.
An exploration of the physical properties of sound, synthesizers, music recording, music arrangement, and the history of electronic music.  **Additional Fees:** Course fee applies.

MUS-114. American Music. 3 Credits.
LECT 3 hrs.
A survey of American Roots music from the 19th century to the present. Early Anglo and African influences are presented followed by 20th century folk, gospel, Hispanic, various styles of country, bluegrass and related acoustic music, various styles of blues and jazz, Cajun and zydeco, early R&B, soul and the beginnings of rock and roll.

MUS-117. Music Theory I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.  **Prerequisites:** MUS-011 or permission of department chair  
**Corequisites:** MUS-125, MUS-109, MUS-135.

MUS-118. Music Theory II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.  **Prerequisites:** MUS-117  
**Corequisites:** MUS-126, MUS-110, MUS-136.
MUS-124. Electronic Music II. 3 Credits.
LECT 3 hrs.
This course is a continuation of Introduction to Electronic Music with increased application of sound systems and MIDI systems. Students produce recorded final projects.
Prerequisites: MUS-112
Additional Fees: Course fee applies.

MUS-125. Applied Music Secondary-Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano.

MUS-126. Applied Music Secondary-Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-125

MUS-127. Principles of Strings I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to convey an understanding of the basic technical skills on violin studies with the first position.

MUS-128. Principles of Strings II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to complete the study of basic violin, viola techniques and the understanding of the proper pedagogical approaches.
Prerequisites: MUS-127.

MUS-129. Music in Early Childhood. 3 Credits.
LECT 3 hrs., LAB 2 hrs.
A course offering students a wide variety of meaningful experiences which provide a foundation for musical growth and understanding of early childhood music. This is a hands-on course in which students must participate.

MUS-133. Development of Musical Theater. 3 Credits.
LECT 3 hrs.
This course is an examination of the elements of the musical (singing, acting, dancing, song construction, story development) and an exploration of the beginnings of the musical theater from Europe to Broadway.

MUS-135. Applied Music Primary I. 1 Credit.
LAB 1 hr.
For Music emphasis students only. This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Corequisites: MUS-125, MUS-109, MUS-117
Additional Fees: Course fee applies.

MUS-136. Applied Music Primary II. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-135
Corequisites: MUS-126, MUS-110, MUS-118
Additional Fees: Course fee applies.

MUS-137. Applied Music Primary III. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-136
Corequisites: MUS-225, MUS-209, MUS-215
Additional Fees: Course fee applies.

MUS-138. Applied Music Primary IV. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-137
Corequisites: MUS-226, MUS-210, MUS-216
Additional Fees: Course fee applies.

MUS-139. Wind Ensemble I. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-140. Wind Ensemble II. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-141. Wind Ensemble III. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-142. Wind Ensemble IV. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-143. World Music and Culture. 3 Credits.
LECT 3 hrs.
A survey of world folk music including material from Asia, the Middle East, Africa, Europe, North and South America. Lectures and discussions are illustrated by recordings, DVDs and online resources. Students may be invited to contribute course subject matter by bringing personally favored music to be studied.
MUS-145. Chamber Choir I. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-146. Chamber Choir II. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-147. Chamber Choir III. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-148. Chamber Choir IV. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-150. Jazz History and Styles. 3 Credits.
LECT 3 hrs.
This course is an examination of the styles and elements of this improvisational music from the 1860's to the present. This course focuses on the evolution of jazz from its roots in the blues and spirituals to the emergence of contemporary fusion and avant-garde styles.

MUS-152. Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course designed specifically for the non-music major.

MUS-153. Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course designed specifically for the non-music major.

MUS-154. Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course designed specifically for the non-music major.

MUS-155. Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course designed specifically for the non-music major.

MUS-159. Guitar I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-160. Guitar II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-161. Guitar III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-162. Guitar IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-163. Rock History and Culture. 3 Credits.
LECT 3 hrs.
This course traces the evolution of rock music from 1955 to the present and examines the cultural impact of the music form on contemporary society.

MUS-165. Introduction to Music Recording. 3 Credits.
LECT 3 hrs.
An introduction to the commercial recording studio. Students explore the equipment and techniques used in the recording of various types of contemporary music. Topics include studio acoustics and design, sound and hearing, microphones and microphone technique, recording console and signal flow, analog and digital recording systems, and signal processing. Students receive hands-on experience on both analog and digital recording equipment during in-class demonstrations and workshops.

Additional Fees: Course fee applies.

MUS-166. Introduction to Music Business. 3 Credits.
LECT 3 hrs.
A general overview of all areas of music business including demo tape promotion, contracts, managers, copyright laws and publishing. Guest lecturers include prominent industry lawyers and agents.
MUS-167. Music Recording II. 3 Credits.
LECT 3 hrs.
A continuation of MUS-165 Introduction to Music Recording in which students explore more complex recording situations through individual student projects. Students receive hands-on experience in session set-up, miking, use of outboard signal processing, mixing and production.  
Prerequisites: MUS-165  
Corequisites: MUS-180  
Additional Fees: Course fee applies.

MUS-170. Symphony Orchestra I. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-171. Symphony Orchestra II. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-172. Symphony Orchestra III. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-173. Symphony Orchestra IV. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-176. Aural Comprehension I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.  
Additional Fees: Course fee applies.

MUS-177. Aural Comprehension II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.  
Additional Fees: Course fee applies.

MUS-178. Aural Comprehension III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.  
Additional Fees: Course fee applies.

MUS-179. Aural Comprehension IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.  
Additional Fees: Course fee applies.

MUS-180. Microphone Techniques. 2 Credits.
LECT 1 hr., LAB 2 hrs.
An in-depth study of the different techniques used for miking an array of instruments from woodwinds, brass and strings, to drums and electric instruments. Students study the design of dynamic and condenser microphones, special microphones used for certain instruments, sound comparison between different types of microphones and microphone placement on instruments.  
Prerequisites: MUS-165  
Corequisites: MUS-167  
Additional Fees: Course fee applies.

MUS-182. Audio Production Techniques. 1 Credit.
LECT 4 hrs.
An examination of the production techniques used in the recording of contemporary and classic music. The course focuses on the development of critical listening skills, as well as the use of different recording and mixing techniques in an effort to enhance the overall production value of a recording. Students produce a sound-alike project in which they must emulate the sound of a preexisting recording.  
Prerequisites: MUS-165, MUS-167, MUS-180  
Additional Fees: Course fee applies.

MUS-184. Musical Theatre Production and Performance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Musical Theatre Production and Performance offers demanding training designed to prepare students for a career in musical theatre. Students participate in all aspects of the production from technical elements to a final performance.

MUS-201. Jazz Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-202. Jazz Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-203. Jazz Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-204. Jazz Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-209. Applied Music Secondary-Voice III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence planned to develop vocal ability. The course emphasizes vocal techniques, diction and sight-reading.  
Prerequisites: MUS-110.
LECT 1 hr., LAB 2 hrs.
Music students only. A four-semester sequence planned to develop vocal ability. This course emphasizes vocal techniques, diction and sight-reading.
Prerequisites: MUS-209 or permission of department chair.

MUS-214. Form and Analysis. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A study of larger forms which have evolved throughout music history. Emphasis is placed on score reading of symphonies, large choral works, operas, chamber works and sonata repertoire.
Prerequisites: MUS-117, MUS-118, MUS-215, MUS-216.

MUS-215. Music Theory III. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-119
Corequisites: MUS-225, MUS-209, MUS-137.

MUS-216. Music Theory IV. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-215

MUS-217. Music History and Literature to 1750. 3 Credits.
LECT 3 hrs.
An in-depth study of music in Western civilization from ancient times through the Baroque period. Music from each period is discussed and analyzed.

MUS-218. Music History and Literature From 1750. 3 Credits.
LECT 3 hrs.
A continuation of Music History and Literature from 1750. A study of music from the late Baroque through the Romantic period. Includes analysis of representative works.

MUS-220. Music Business II. 3 Credits.
LECT 3 hrs.
This course expands upon the concepts learned in MUS-166 Introduction to Music Business and delves deeper into the areas of marketing and promotion, CD packaging, creation of a business entity and website design for the purpose of self-promotion.
Prerequisites: MUS-166.

MUS-221. Chamber Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-222. Chamber Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-223. Chamber Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-224. Chamber Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-225. Applied Music Secondary-Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-126

MUS-226. Applied Music Secondary - Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-225

MUS-227. Operetta and Music Theatre I. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-228. Operetta and Musical Theatre II. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-229. Operetta and Musical Theatre III. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.
**MUS-230. Operetta and Musical Theatre IV. 1 Credit.**
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

**MUS-233. Independent Study in Music. 1 Credit.**
LECT 1 hr.
For Music Students only. This course is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the faculty member and student and must be approved by the department chair.

**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

**MUS-234. Independent Study in Music. 3 Credits.**
LECT 3 hrs.
For Music Students only. Independent Study in Music is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the faculty member and student and must be approved by the department chair.

**Prerequisites:** Permission of department chair  
**Additional Fees:** Course fee applies.

**MUS-237. Cabaret Music Theatre. 1 Credit.**
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

**MUS-238. Cabaret Music Theatre II. 1 Credit.**
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

**MUS-239. Cabaret Music Theatre III. 1 Credit.**
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

**MUS-240. Jazz Guitar. 1 Credit.**
LECT 1 hr., LAB 2 hrs.
This course is recommended for guitar majors, jazz ensemble guitarists or those with equivalent skills. It covers harmonic and melodic aspects of jazz improvisation in a solo or ensemble setting. Topics include modes, arpeggios and chord structure, and inversions of seventh chords in all keys. Students must already have a working knowledge of the guitar, i.e., bar chords, major/ minor scales, some experience with notes and chord symbols. While this is not a class for beginner guitarists, beginner jazz players are welcome.

**MUS-241. Guitar Ensemble. 1 Credit.**
LECT 1 hr., LAB 2 hrs.
For guitar majors or those with equivalent skills (by permission of instructor or music instructor). Guitar technique and fingerboard mastery are discussed. Sight-reading is developed in class and individual projects assigned. Students explore the guitar chamber repertoire which includes duets, trios and quartets as well as other combinations (i.e., guitar with flute, violin or voice).

**MUS-242. Cabaret Music Theatre IV. 1 Credit.**
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

**MUS-243. Musical Theatre Auditions. 3 Credits.**
LECT 3 hrs.
This course introduces the students to the preliminary work involved in the techniques of auditioning. The protocol of auditioning, including resume, agents, casting directors, scene reading and actual vocal selections, are covered in class.

**MUS-244. Independent Study in Electronic Music I. 1 Credit.**
LECT 1 hr.
This course is an exploration of analog synthesis techniques and devices designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.

**Prerequisites:** MUS-112, MUS-124  
**Additional Fees:** Course fee applies.

**MUS-245. Independent Study in Electronic Music II. 1 Credit.**
LECT 1 hr.
This course is an exploration of computer-based music workstation and digital technology designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.

**Prerequisites:** MUS-112, MUS-124, MUS-244  
**Additional Fees:** Course fee applies.

**MUS-248. Enjoyment of Music. 3 Credits.**
LECT 3 hrs.
Emphasis is placed on experiencing, discussing and realizing various musical styles throughout history to the present time. All music from the ancient to even today’s most popular styles are covered, but with specific attention given to how to listen and appreciate each musical genre. Students may even be invited to contribute to the course content by bringing personally favored music to be studied.

**MUS-249. Practicum. 1 Credit.**
LECT 1 hr.
For Music Students only. Weekly lessons in a one-to-one or small group arrangement with a faculty member prepares the student in the techniques of professional music recording. Appropriate projects are assigned to help the individual student develop his or her recording skills in various situations and with various types of equipment. A finished project is produced by the student and judged in a jury session.

**Prerequisites:** MUS-165, MUS-167, MUS-180, MUS-182, MUS-259  
**Additional Fees:** Course fee applies.
MUS-250. Internship in Music Recording. 1 Credit.
LECT 1 hr.
For Music students only. This course assigns the student to experience the actual working conditions in an established music recording studio facility. With the cooperation of the facility director, appropriate work projects are assigned and the student judged on his or her level of knowledge, expertise and confidence in the various aspects of the music recording business.
Prerequisites: MUS-165, MUS-167, MUS-180, MUS-182, MUS-259
Additional Fees: Course fee applies.

MUS-253. Independent Study in Music II. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-254. Independent Study in Music III. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-255. Independent Study in Music IV. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-258. Contemporary Music: 20th-21st Century. 3 Credits.
LECT 3 hrs.
A study of musical trends, idioms, styles and ascetics of the Classical Music, Jazz, Rock, Latin Music, and Film Music of the 20th and 21st centuries. In addition to the study of the literature, students will be broadly educated on the fundamental elements of music including melody, harmony, counterpoint, musical forms, texture, and orchestration. Students may be invited to contribute subject matter by bringing personally favored music of the 20th and 21st Centuries to be studied, analyzed and discussed.

MUS-259. Hard Disc Recording. 2 Credits.
LECT 1 hr., LAB 3 hrs.
Students learn about the operation and application of AVID Pro Tools hard disk recording and editing software. Topics include signal flow and routing, editing, fades and cross fades, digital signal processing, mixing, and automation.
Prerequisites: MUS-165, MUS-167 and MUS-180 or MUS-165, MUS-112 and MUS-124
Additional Fees: Course fee applies.

MUS-291. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.

MUS-292. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.
Music Technology

Associate in Science Degree

These specialized career programs are designed to prepare students for entry into the job market or to continue their studies at four-year colleges.

For more information, visit the Music website (http://www.ccm.edu/academics/divdep/liberalarts/music).

Degrees
- AS Music Technology - Electronic Music Option (p. 149)
- AS Music Technology - Music Recording Option (p. 150)

Electronic Music

An Option within Music Technology
(P2171)

The Electronic Music option introduces students to the history, equipment and techniques of composing, arranging and performing music using electronic technology. Students learn theory and have hands-on experience with analog and digital technology, MIDI and General MIDI sampling, sound output systems and tape recording. Students also use computer technology to create electronic music and learn techniques and application of software programs dealing with music recording, notation, sound editors and sound libraries. All students must pass a theory placement exam or register for MUS-011 Basic Musicianship I and MUS-176 Aural Comprehension I during the first semester.

Students must receive a grade of C or better in MUS-011 Basic Musicianship I to register for MUS-117 Music Theory I. Any student who receives a grade of D in any music core course must repeat the course and is required to see the Music department chair before registering for the next semester.


General Education Foundation

Communication 6
- ENG-111 English Composition I
- ENG-112 English Composition II

Math-Science-Technology 10
- MAT-110 College Algebra
- CMP-110 Introduction to Data Processing

Laboratory Science (4 credits) - From the General Education Course List, choose any 4 credit science course that includes a lab component

Social Science - Choose one of the following 3
- PSY-113 General Psychology
- SOC-120 Principles of Sociology

Humanities - Choose one of the following 3
- MUS-114 American Music
- MUS-143 World Music and Culture
- MUS-150 Jazz History and Styles
- MUS-163 Rock Hist. & Culture
- MUS-217 Music History and Literature to 1750
- MUS-218 Music History and Literature From 1750
- MUS-248 Enjoyment of Music
- MUS-258 Contemporary Music: 20th-21st Century

Social Science or Humanities Elective 3

Choose from General Education course list

General Education Electives 6
- Language Sequence or History

*Please refer to the #2171 Curriculum Check Sheet for specific Language or History choices.

General Education Foundation Credits 31

Electronic Musical Core

*Please Note: Music Theory, Applied Music Primary, and Applied Music Secondary are co-requisites and must be taken together.

MUS-117 Music Theory I 3
MUS-118 Music Theory II 3
MUS-215 Music Theory III 3
MUS-216 Music Theory IV 3

Note: Students must be registered for at least 6 Music credits in order to enroll in Applied Music Primary I - III

MUS-125 Applied Music Primary I 1
MUS-136 Applied Music Primary II 1
MUS-137 Applied Music Primary III 1

Select one of the following sequences (Note: All music majors must register for Applied Music Secondary Piano I - IV unless their primary instrument is piano, in which case students must register for Applied Music Secondary Voice I - IV)

MUS-125 Applied Music Secondary-Piano I 1
or MUS-109 Applied Music Secondary-Voice I
MUS-126 Applied Music Secondary-Piano II 1
or MUS-110 Applied Music Secondary-Voice II
MUS-225 Applied Music Secondary-Piano III 1
or MUS-209 Applied Music Secondary-Voice III
MUS-226 Applied Music Secondary - Piano IV 1
or MUS-210 Applied Music Secondary-Voice IV

Ensemble
MUS-101 Chorus I 1
and one of the following 1
- MUS-102 Chorus II
- MUS-145 Chamber Choir I
- MUS-139 Wind Ensemble I
- MUS-170 Symphony Orchestra I
- MUS-201 Jazz Ensemble I
- MUS-221 Chamber Ensemble I

Electronic Music
Music Technology

MUS-112 Introduction to Electronic Music 3
MUS-124 Electronic Music II 3
MUS-165 Introduction to Music Recording 3
MUS-166 Introduction to Music Business 3
MUS-244 Independent Study in Electronic Music I 1
MUS-245 Independent Study in Electronic Music II 1
MUS-259 Hard Disk Recording 2
Electronic Musical Core Credits 37
Total Credits 68

Music Recording
An Option within Music Technology
(P2170)

The Music Recording option introduces students to the equipment and practices used in the recording of contemporary music. Students explore multi-track and live recording techniques with hands-on use of both analog and digital recording equipment. In addition, students learn the application of industry standard hard disk recording and editing software. All students must pass a theory placement exam or register for MUS-011 Basic Musicianship I and MUS-176 Aural Comprehension I during the first semester.

Students must receive a grade of C or better in MUS-011 Basic Musicianship I to register for MUS-117 Music Theory I. Any student who receives a grade of D in any music core course must repeat the course and is required to see the Music department chair before registering for the next semester.


General Education Foundation

Communication 6
ENG-111 English Composition I
ENG-112 English Composition II
Math-Science-Technology 10
MAT-110 College Algebra
CMP-110 Introduction to Data Processing
Laboratory Science (4 credits) - From the General Education Course List, choose any 4 credit science course that includes a lab component
Social Science - Choose one of the following 3
PSY-113 General Psychology
SOC-120 Principles of Sociology
Humanities - Choose one of the following 3
MUS-114 American Music
MUS-143 World Music and Culture
MUS-150 Jazz History and Styles

Music Recording Core

*Please Note: Music Theory, Applied Music Primary, and Applied Music Secondary are co-requisites and must be taken together.

MUS-117 Music Theory I 3
MUS-118 Music Theory II 3
MUS-215 Music Theory III 3
MUS-216 Music Theory IV 3
Note: Students must be registered for at least 6 Music credits in order to enroll in Applied Music Primary I - III

MUS-135 Applied Music Primary I 1
MUS-136 Applied Music Primary II 1
MUS-137 Applied Music Primary III 1
Select one of the following sequences (Note: All music majors must register for Applied Music Secondary Piano I & II unless their primary instrument is piano, in which case students must register for Applied Music Secondary Voice I & II)

MUS-125 Applied Music Secondary-Piano I 1
or MUS-109 Applied Music Secondary-Voice I
MUS-126 Applied Music Secondary-Piano II 1
or MUS-110 Applied Music Secondary-Voice II

Ensemble
MUS-101 Chorus I 1
and one of the following 1
MUS-102 Chorus II
MUS-139 Wind Ensemble I
MUS-145 Chamber Choir I
MUS-170 Symphony Orchestra I
MUS-201 Jazz Ensemble I
MUS-221 Chamber Ensemble I

Music Recording

MUS-165 Introduction to Music Recording 3
MUS-166 Introduction to Music Business 3
MUS-167 Music Recording II 3
MUS-180 Microphone Techniques 2
MUS-182 Audio Production Techniques 1
MUS-259 Hard Disk Recording 2
MUS-249 Practicum 1
MUS-250 Internship in Music Recording 1
ELT-123 Studio Maintenance 3

*Please refer to the #2170 Curriculum Check Sheet for specific Language or History choices.

General Education Foundation Credits 31

Music Recording Core

*Please Note: Music Theory, Applied Music Primary, and Applied Music Secondary are co-requisites and must be taken together.

MUS-117 Music Theory I 3
MUS-118 Music Theory II 3
MUS-215 Music Theory III 3
MUS-216 Music Theory IV 3
Note: Students must be registered for at least 6 Music credits in order to enroll in Applied Music Primary I - III

MUS-135 Applied Music Primary I 1
MUS-136 Applied Music Primary II 1
MUS-137 Applied Music Primary III 1
Select one of the following sequences (Note: All music majors must register for Applied Music Secondary Piano I & II unless their primary instrument is piano, in which case students must register for Applied Music Secondary Voice I & II)

MUS-125 Applied Music Secondary-Piano I 1
or MUS-109 Applied Music Secondary-Voice I
MUS-126 Applied Music Secondary-Piano II 1
or MUS-110 Applied Music Secondary-Voice II

Ensemble
MUS-101 Chorus I 1
and one of the following 1
MUS-102 Chorus II
MUS-139 Wind Ensemble I
MUS-145 Chamber Choir I
MUS-170 Symphony Orchestra I
MUS-201 Jazz Ensemble I
MUS-221 Chamber Ensemble I

Music Recording

MUS-165 Introduction to Music Recording 3
MUS-166 Introduction to Music Business 3
MUS-167 Music Recording II 3
MUS-180 Microphone Techniques 2
MUS-182 Audio Production Techniques 1
MUS-259 Hard Disk Recording 2
MUS-249 Practicum 1
MUS-250 Internship in Music Recording 1
ELT-123 Studio Maintenance 3

*Please refer to the #2170 Curriculum Check Sheet for specific Language or History choices.
Music Recording Core Credits 38
Total Credits 69

Faculty

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Courses

MUS-011. Basic Musicianship I. 3 Credits.
LECT 3 hrs.
A pre-music theory course designed to develop reading skills through keyboard, sight-singing and ear-training. This course may not be used as a curriculum requirement for any major. Students must pass this course or an equivalent Music Theory placement exam to register for MUS-117 Theory I.

MUS-101. Chorus I. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-102. Chorus II. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-103. Chorus III. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-104. Chorus IV. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading.
Prerequisites: Permission of department chair.

MUS-110. Applied Music Secondary-Voice II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading.
Prerequisites: MUS-109.

MUS-112. Introduction to Electronic Music. 3 Credits.
LECT 3 hrs.
An exploration of the physical properties of sound, synthesizers, music recording, music arrangement, and the history of electronic music.
Additional Fees: Course fee applies.

MUS-114. American Music. 3 Credits.
LECT 3 hrs.
A survey of American Roots music from the 19th century to the present. Early Anglo and African influences are presented followed by 20th century folk, gospel, Hispanic, various styles of country, bluegrass and related acoustic music, various styles of blues and jazz, Cajun and zydeco, early R&B, soul and the beginnings of rock and roll.

MUS-117. Music Theory I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-011 or permission of department chair.
Corequisites: MUS-125, MUS-109, MUS-135.

MUS-118. Music Theory II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-117.

MUS-124. Electronic Music II. 3 Credits.
LECT 3 hrs.
This course is a continuation of Introduction to Electronic Music with increased application of sound systems and MIDI systems. Students produce recorded final projects.
Prerequisites: MUS-112
Additional Fees: Course fee applies.
MUS-125. Applied Music Secondary-Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano.

MUS-126. Applied Music Secondary-Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-125

MUS-127. Principles of Strings I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to convey an understanding of the basic technical skills on violin studies with the first position.

MUS-128. Principles of Strings II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to complete the study of basic violin, viola techniques and the understanding of the proper pedagogical approaches.
Prerequisites: MUS-127.

MUS-129. Music in Early Childhood. 3 Credits.
LECT 3 hrs., LAB 2 hrs.
A course offering students a wide variety of meaningful experiences which provide a foundation for musical growth and understanding of early childhood music. This is a hands-on course in which students must participate.

MUS-133. Development of Musical Theater. 3 Credits.
LECT 3 hrs.
This course is an examination of the elements of the musical (singing, acting, dancing, song construction, story development) and an exploration of the beginnings of the musical theater from Europe to Broadway.

MUS-135. Applied Music Primary I. 1 Credit.
LAB 1 hr.
For Music emphasis students only. This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Corequisites: MUS-125, MUS-109, MUS-117
Additional Fees: Course fee applies.

MUS-136. Applied Music Primary II. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-135
Corequisites: MUS-126, MUS-110, MUS-118
Additional Fees: Course fee applies.

MUS-137. Applied Music Primary III. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-136
Corequisites: MUS-225, MUS-209, MUS-215
Additional Fees: Course fee applies.

MUS-138. Applied Music Primary IV. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-137
Corequisites: MUS-226, MUS-210, MUS-216
Additional Fees: Course fee applies.

MUS-139. Wind Ensemble I. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-140. Wind Ensemble II. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-141. Wind Ensemble III. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-142. Wind Ensemble IV. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-143. World Music and Culture. 3 Credits.
LECT 3 hrs.
A survey of world folk music including material from Asia, the Middle East, Africa, Europe, North and South America. Lectures and discussions are illustrated by recordings, DVDs and online resources. Students may be invited to contribute course subject matter by bringing personally favored music to be studied.

MUS-145. Chamber Choir I. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.
MUS-146. Chamber Choir II. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-147. Chamber Choir III. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-148. Chamber Choir IV. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-150. Jazz History and Styles. 3 Credits.
LECT 3 hrs.
This course is an examination of the styles and elements of this improvisational music from the 1860’s to the present. This course focuses on the evolution of jazz from its roots in the blues and spirituals to the emergence of contemporary fusion and avant-garde styles.

MUS-152. Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-153. Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course designed specifically for the non-music major.

MUS-154. Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course designed specifically for the non-music major.

MUS-155. Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course designed specifically for the non-music major.

MUS-159. Guitar I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-160. Guitar II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-161. Guitar III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-162. Guitar IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-163. Rock History and Culture. 3 Credits.
LECT 3 hrs.
This course traces the evolution of rock music from 1955 to the present and examines the cultural impact of the music form on contemporary society.

MUS-165. Introduction to Music Recording. 3 Credits.
LECT 3 hrs.
An introduction to the commercial recording studio. Students explore the equipment and techniques used in the recording of various types of contemporary music. Topics include studio acoustics and design, sound and hearing, microphones and microphone technique, recording console and signal flow, analog and digital recording systems, and signal processing. Students receive hands-on experience on both analog and digital recording equipment during in-class demonstrations and workshops.
Additional Fees: Course fee applies.

MUS-166. Introduction to Music Business. 3 Credits.
LECT 3 hrs.
A general overview of all areas of music business including demo tape promotion, contracts, managers, copyright laws and publishing. Guest lecturers include prominent industry lawyers and agents.
MUS-167. Music Recording II. 3 Credits.
LECT 3 hrs.
A continuation of MUS-165 Introduction to Music Recording in which students explore more complex recording situations through individual student projects. Students receive hands-on experience in session set-up, miking, use of outboard signal processing, mixing and production.
Prerequisites: MUS-165
Corequisites: MUS-180
Additional Fees: Course fee applies.

MUS-170. Symphony Orchestra I. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-171. Symphony Orchestra II. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-172. Symphony Orchestra III. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-173. Symphony Orchestra IV. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-176. Aural Comprehension I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-177. Aural Comprehension II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-178. Aural Comprehension III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-179. Aural Comprehension IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-180. Microphone Techniques. 2 Credits.
LECT 1 hr., LAB 2 hrs.
An in-depth study of the different techniques used for miking an array of instruments from woodwinds, brass and strings, to drums and electric instruments. Students study the design of dynamic and condenser microphones, special microphones used for certain instruments, sound comparison between different types of microphones and microphone placement on instruments.
Prerequisites: MUS-165
Corequisites: MUS-180
Additional Fees: Course fee applies.

MUS-182. Audio Production Techniques. 1 Credit.
LECT 4 hrs.
An examination of the production techniques used in the recording of contemporary and classic music. The course focuses on the development of critical listening skills, as well as the use of different recording and mixing techniques in an effort to enhance the overall production value of a recording. Students produce a sound-alike project in which they must emulate the sound of a preexisting recording.
Prerequisites: MUS-165, MUS-167, MUS-180
Additional Fees: Course fee applies.

MUS-183. Musical Theatre Production and Performance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Musical Theatre Production and Performance offers demanding training designed to prepare students for a career in musical theatre. Students participate in all aspects of the production from technical elements to a final performance.

MUS-201. Jazz Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-202. Jazz Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-203. Jazz Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-204. Jazz Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-209. Applied Music Secondary-Voice III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence planned to develop vocal ability. The course emphasizes vocal techniques, diction and sight-reading.
Prerequisites: MUS-110.
LECT 1 hr., LAB 2 hrs.
Music students only. A four-semester sequence planned to develop vocal ability. This course emphasizes vocal techniques, diction and sight-reading.
Prerequisites: MUS-209 or permission of department chair.

MUS-214. Form and Analysis. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A study of larger forms which have evolved throughout music history. Emphasis is placed on score reading of symphonies, large choral works, operas, chamber works and sonata repertoire.
Prerequisites: MUS-117, MUS-118, MUS-215, MUS-216.

MUS-215. Music Theory III. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-119
Corequisites: MUS-225, MUS-209, MUS-137.

MUS-216. Music Theory IV. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-215

MUS-217. Music History and Literature to 1750. 3 Credits.
LECT 3 hrs.
An in-depth study of music in Western civilization from ancient times through the Baroque period. Music from each period is discussed and analyzed.

MUS-218. Music History and Literature From 1750. 3 Credits.
LECT 3 hrs.
A continuation of Music History and Literature from 1750. A study of music from the late Baroque through the Romantic period. Includes analysis of representative works.

MUS-220. Music Business II. 3 Credits.
LECT 3 hrs.
This course expands upon the concepts learned in MUS-166 Introduction to Music Business and delves deeper into the areas of marketing and promotion, CD packaging, creation of a business entity and website design for the purpose of self-promotion.
Prerequisites: MUS-166.

MUS-221. Chamber Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-222. Chamber Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-223. Chamber Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-224. Chamber Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-225. Applied Music Secondary-Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-126

MUS-226. Applied Music Secondary - Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-225

MUS-227. Operetta and Music Theatre I. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-228. Operetta and Musical Theatre II. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-229. Operetta and Musical Theatre III. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.
MUS-230. Operetta and Musical Theatre IV. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-233. Independent Study in Music. 1 Credit.
LECT 1 hr.
For Music Students only. This course is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-234. Independent Study in Music. 3 Credits.
LECT 3 hrs.
For Music Students only. Independent Study in Music is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-237. Cabaret Music Theatre. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-238. Cabaret Music Theatre II. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-239. Cabaret Music Theatre III. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-240. Jazz Guitar. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is recommended for guitar majors, jazz ensemble guitarists or those with equivalent skills. It covers harmonic and melodic aspects of jazz improvisation in a solo or ensemble setting. Topics include modes, arpeggios and chord structure, and inversions of seventh chords in all keys. Students must already have a working knowledge of the guitar, i.e., bar chords, major/minor scales, some experience with notes and chord symbols. While this is not a class for beginner guitarists, beginner jazz players are welcome.

MUS-241. Guitar Ensemble. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For guitar majors or those with equivalent skills (by permission of instructor or music instructor). Guitar technique and fingerboard mastery are discussed. Sight-reading is developed in class and individual projects assigned. Students explore the guitar chamber repertoire which includes duets, trios and quartets as well as other combinations (i.e., guitar with flute, violin or voice).

MUS-242. Cabaret Music Theatre IV. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-230. Operetta and Musical Theatre IV. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-242. Cabaret Music Theatre IV. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-243. Musical Theatre Auditions. 3 Credits.
LECT 3 hrs.
This course introduces the students to the preliminary work involved in the techniques of auditioning. The protocol of auditioning, including resume, agents, casting directors, scene reading and actual vocal selections, are covered in class.

MUS-244. Independent Study in Electronic Music I. 1 Credit.
LECT 1 hr.
This course is an exploration of analog synthesis techniques and devices designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.
Prerequisites: MUS-112, MUS-124
Additional Fees: Course fee applies.

MUS-245. Independent Study in Electronic Music II. 1 Credit.
LECT 1 hr.
This course is an exploration of computer-based music workstation and digital technology designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.
Prerequisites: MUS-112, MUS-124, MUS-244
Additional Fees: Course fee applies.

MUS-246. Enjoyment of Music. 3 Credits.
LECT 3 hrs.
Emphasis is placed on experiencing, discussing and realizing various musical styles throughout history to the present time. All music from the ancient to even today’s most popular styles are covered, but with specific attention given to how to listen and appreciate each musical genre. Students may even be invited to contribute to the course content by bringing personally favored music to be studied.

MUS-249. Practicum. 1 Credit.
LECT 1 hr.
For Music Students only. Weekly lessons in a one-to-one or small group arrangement with a faculty member prepares the student in the techniques of professional music recording. Appropriate projects are assigned to help the individual student develop his or her recording skills in various situations and with various types of equipment. A finished project is produced by the student and judged in a jury session.
Prerequisites: MUS-165, MUS-167, MUS-180, MUS-182, MUS-259
Additional Fees: Course fee applies.
MUS-250. Internship in Music Recording. 1 Credit.
LECT 1 hr.
For Music students only. This course assigns the student to experience the actual working conditions in an established music recording studio facility. With the cooperation of the facility director, appropriate work projects are assigned and the student judged on his or her level of knowledge, expertise and confidence in the various aspects of the music recording business.
Prerequisites: MUS-165, MUS-167, MUS-180, MUS-182, MUS-259
Additional Fees: Course fee applies.

MUS-253. Independent Study in Music II. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-254. Independent Study in Music III. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-255. Independent Study in Music IV. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-258. Contemporary Music: 20th-21st Century. 3 Credits.
LECT 3 hrs.
A study of musical trends, idioms, styles and ascetics of the Classical Music, Jazz, Rock, Latin Music, and Film Music of the 20th and 21st centuries. In addition to the study of the literature, students will be broadly educated on the fundamental elements of music including melody, harmony, counterpoint, musical forms, texture, and orchestration. Students may be invited to contribute subject matter by bringing personally favored music of the 20th and 21st Centuries to be studied, analyzed and discussed.

MUS-259. Hard Disc Recording. 2 Credits.
LECT 1 hr., LAB 3 hrs.
Students learn about the operation and application of AVID Pro Tools hard disk recording and editing software. Topics include signal flow and routing, editing, fades and cross fades, digital signal processing, mixing, and automation.
Prerequisites: MUS-165, MUS-167 and MUS-180 or MUS-165, MUS-112 and MUS-124
Additional Fees: Course fee applies.

MUS-291. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.

MUS-292. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.
Musical Theatre

Associate in Arts Degree

These university-parallel curricula are designed to meet the basic requirements of the first two years of college programs for students who plan to graduate and transfer to a four-year college or university to study for the baccalaureate degree. The curricula offer a wide range of flexibility in terms of a student's ultimate educational goals and provide adequate preparation for further study leading to professional competence in specialized fields.

These programs also accommodate individuals seeking two years of a liberal higher education.

The program offers options in Human Services, Humanities/International Studies, Humanities/Music and Humanities/Social Science.

For more information, visit the Musical Theatre (http://www.ccm.edu/academics/degrees/musicaltheatre.aspx) website.

Degrees

AA Musical Theatre

(P2006)

This unique major for aspiring performers is designed for students who want to excel in "the triple threat" of music, performance and dance. The program provides a foundation to transfer and earn a Bachelor of Music, Bachelor of Arts or a Bachelor of Fine Arts degree. Musical Theatre majors learn to read music and audition with enough proficiency to transfer to a four-year institution or audition for legitimate theater.

All students must pass a theory placement exam or register for MUS-011 Basic Musicianship I and MUS-176 Aural Comprehension I during the first semester. Students must receive a grade of C or better in MUS-011 Basic Musicianship I to register for MUS-117 Music Theory I. Any student who receives a grade of D in any Music Core course must repeat the course and is required to see the Music department chair before registering for the next semester.

General Education Foundation

Communication 9
ENG-111 English Composition I
ENG-112 English Composition II
COM-109 Speech Fundamentals

Math/Science/Technology - Choose from the General Education 12 course list
Mathematics (3 - 8 CR)
Laboratory Science (4 - 8 CR)
Technology (0 - 4 CR)

Social Science 6
PSY-113 General Psychology
SOC-120 Principles of Sociology

Humanities 9
MUS-133 Development of Musical Theater
MUS-114 American Music

History 6
MUS-163 Rock Hist. & Culture

*Please refer to the #2006 Curriculum Check Sheet for specific History choices.

Diversity - Choose one of the following: 3
MUS-143 World Music and Culture
MUS-150 Jazz History and Styles

General Education Foundation Credits 45

Musical Theatre Core
MUS-117 Music Theory I 3
MUS-109 Applied Music Secondary-Voice I 1
MUS-152 Piano I 1
MUS-153 Piano II 1
MUS-145 Chamber Choir I 1
MUS-146 Chamber Choir II 1
MUS-147 Chamber Choir III 1
MUS-148 Chamber Choir IV 1

Note: Students must be registered for at least 6 Music credits in order to enroll in Applied Music Primary I & II.
MUS-135 Applied Music Primary I 1
MUS-136 Applied Music Primary II 1

MUS-227 Operetta and Music Theatre I 1
MUS-228 Operetta and Musical Theatre II 1
MUS-229 Operetta and Musical Theatre III 1
MUS-230 Operetta and Musical Theatre IV 1
MUS-243 Musical Theatre Auditions 3

DRA-110 Acting I 3
DAN-146 Dance for Musical Theatre 1

Musical Theatre Core Credits 23

Total Credits 68

Faculty

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B.M., Montclair State University
A.A., County College of Morris
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Courses

DRA-110. Acting I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course concentrates on the basic principles of acting. Students are expected to apply these principles in frequent exercises, mimes, improvisations and at least four major roles.

DRA-112. Acting II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
An advanced course in acting with emphasis on scene work. Students are responsible for the rehearsal, presentation and written analysis of six scenes.
Prerequisites: DRA-110 or permission of department chair.

DRA-114. The Drama Workshop. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an introduction to the major elements of play production, both onstage (improvisation, mime, acting) and backstage (set design, costuming, makeup). These skills are investigated through in-class exercises and culminate in the presentation of a short scene.

DRA-116. Dramatic Performance I. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-118. Dramatic Performance II. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theatre. Students participate as actors, technicians and crew members.

DRA-210. Acting III. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
An advanced course that applies the scene study techniques from Acting II to roles from the classical repertoire. Students present scenes from Greek tragedy, Shakespeare, Commedia del’Arte, as well as representative scenes from modern and contemporary theatre. A written scene analysis is required for each presentation.
Prerequisites: DRA-110 and DRA-112.

DRA-213. Acting IV. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course focuses on advanced scene work as well as the practical aspects of life as a working actor. Auditioning, landing a role, preparing resumes and head-shots, finding agents, etc. are some of the topics discussed.

DRA-216. Dramatic Performance III. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-218. Dramatic Performance IV. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-220. Voice for the Actor. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course develops the student’s awareness of the vocal mechanism through the use of the Linklater approach. The focus of this course is in feeling and experiencing the voice and how it works. Each student participates in a Master Class situation.

DRA-222. Movement for the Actor. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an experiential creative workshop based on Laban Movement Analysis to develop the performer’s movement, description, observation and performance skills.

DRA-224. Introduction to Technical Theatre. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course takes a hands-on approach to all the steps required to mount a full production: set design and set construction, lighting, sound and special effects. Students are required to work as members of the various technical crews for the main-stage productions during the semester.

DRA-229. Directing. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is designed to acquaint students with the basic function and the importance of the director in theatre, simultaneously providing them with the opportunity for practical, creative, hands-on directing experience. Class work includes lecture, discussion, and the directing of a number of short scenes and the preparation of a professional promptbook.
Prerequisites: DRA-114.
DRA-231. Internship in Theatre Arts. 3 Credits.
LECT 3 hrs.
The County College of Morris/Shakespeare Theatre of New Jersey at Drew University Internship enables students to apply classroom theatre knowledge to a supervised practical experience in a professional theatre. Internship requirements of a minimum of 150 hours are met through significant participation in the backstage, production, stage and house management of the Shakespeare Theatre, with the opportunity to audition for activities onstage. Students are required to participate in three different capacities in three Shakespeare Theatre productions during the semester.
Prerequisites: DRA-110, DRA-116 and DRA-114 or DRA-224; Minimum 2.0 grade point average; permission of department chair
Corequisites: DRA-232.

DRA-232. Internship/Theatre Arts - Related Class. 1 Credit.
LECT 1 hr.
A related class designed to supplement the student's work experience. Weekly meetings include discussion, written assignments and critical analysis of the internship experience.
Prerequisites: DRA-110, DRA-116 and DRA-114 or DRA-224; Minimum 2.0 grade point average; permission of department chair
Corequisites: DRA-231.

MUS-011. Basic Musicianship I. 3 Credits.
LECT 3 hrs.
A pre-music theory course designed to develop reading skills through keyboard, sight-singing and ear-training. This course may not be used as a curriculum requirement for any major. Students must pass this course or an equivalent Music Theory placement exam to register for MUS-117 Theory I.

MUS-101. Chorus I. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-102. Chorus II. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-103. Chorus III. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

MUS-104. Chorus IV. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.

LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading.
Prerequisites: Permission of department chair.

MUS-110. Applied Music Secondary-Voice II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading.
Prerequisites: MUS-109.

MUS-112. Introduction to Electronic Music. 3 Credits.
LECT 3 hrs.
An exploration of the physical properties of sound, synthesizers, music recording, music arrangement, and the history of electronic music.
Additional Fees: Course fee applies.

MUS-114. American Music. 3 Credits.
LECT 3 hrs.
A survey of American Roots music from the 19th century to the present. Early Anglo and African influences are presented followed by 20th century folk, gospel, Hispanic, various styles of country, bluegrass and related acoustic music, various styles of blues and jazz, Cajun and zydeco, early R&B, soul and the beginnings of rock and roll.

MUS-117. Music Theory I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-011 or permission of department chair
Corequisites: MUS-125, MUS-109, MUS-135.

MUS-118. Music Theory II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-117

MUS-124. Electronic Music II. 3 Credits.
LECT 3 hrs.
This course is a continuation of Introduction to Electronic Music with increased application of sound systems and MIDI systems. Students produce recorded final projects.
Prerequisites: MUS-112
Additional Fees: Course fee applies.

MUS-125. Applied Music Secondary-Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano.

MUS-126. Applied Music Secondary-Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-125

MUS-127. Principles of Strings I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to convey an understanding of the basic technical skills on violin studies with the first position.
MUS-128. Principles of Strings II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to complete the study of basic violin, viola techniques and the understanding of the proper pedagogical approaches.
Prerequisites: MUS-127.

MUS-129. Music in Early Childhood. 3 Credits.
LECT 3 hrs., LAB 2 hrs.
A course offering students a wide variety of meaningful experiences which provide a foundation for musical growth and understanding of early childhood music. This is a hands-on course in which students must participate.

MUS-133. Development of Musical Theater. 3 Credits.
LECT 3 hrs.
This course is an examination of the elements of the musical (singing, acting, dancing, song construction, story development) and an exploration of the beginnings of the musical theater from Europe to Broadway.

MUS-135. Applied Music Primary I. 1 Credit.
LAB 1 hr.
For Music emphasis students only. This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Corequisites: MUS-125, MUS-109, MUS-117
Additional Fees: Course fee applies.

MUS-136. Applied Music Primary II. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-135
Corequisites: MUS-126, MUS-110, MUS-118
Additional Fees: Course fee applies.

MUS-137. Applied Music Primary III. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-136
Corequisites: MUS-225, MUS-209, MUS-215
Additional Fees: Course fee applies.

MUS-138. Applied Music Primary IV. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis.
Prerequisites: MUS-137
Corequisites: MUS-226, MUS-210, MUS-216
Additional Fees: Course fee applies.

MUS-139. Wind Ensemble I. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-140. Wind Ensemble II. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-141. Wind Ensemble III. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-142. Wind Ensemble IV. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.

MUS-143. World Music and Culture. 3 Credits.
LECT 3 hrs.
A survey of world folk music including material from Asia, the Middle East, Africa, Europe, North and South America. Lectures and discussions are illustrated by recordings, DVDs and online resources. Students may be invited to contribute course subject matter by bringing personally favored music to be studied.

MUS-145. Chamber Choir I. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-146. Chamber Choir II. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-147. Chamber Choir III. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-148. Chamber Choir IV. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.
MUS-150. Jazz History and Styles. 3 Credits.
LECT 3 hrs.
This course is an examination of the styles and elements of this improvisational music from the 1860's to the present. This course focuses on the evolution of jazz from its roots in the blues and spirituals to the emergence of contemporary fusion and avant-garde styles.

MUS-152. Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-153. Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-154. Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-155. Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-159. Guitar I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-160. Guitar II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-161. Guitar III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-162. Guitar IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course designed to accommodate non-guitar music students as well as non-music majors.

MUS-163. Rock History and Culture. 3 Credits.
LECT 3 hrs.
This course traces the evolution of rock music from 1955 to the present and examines the cultural impact of the music form on contemporary society.

MUS-165. Introduction to Music Recording. 3 Credits.
LECT 3 hrs.
An introduction to the commercial recording studio. Students explore the equipment and techniques used in the recording of various types of contemporary music. Topics include studio acoustics and design, sound and hearing, microphones and microphone technique, recording console and signal flow, analog and digital recording systems, and signal processing. Students receive hands-on experience on both analog and digital recording equipment during in-class demonstrations and workshops.

Additional Fees: Course fee applies.

MUS-166. Introduction to Music Business. 3 Credits.
LECT 3 hrs.
A general overview of all areas of music business including demo tape promotion, contracts, managers, copyright laws and publishing. Guest lecturers include prominent industry lawyers and agents.

MUS-167. Music Recording II. 3 Credits.
LECT 3 hrs.
A continuation of MUS-165 Introduction to Music Recording in which students explore more complex recording situations through individual student projects. Students receive hands-on experience in session set-up, miking, use of outboard signal processing, mixing and production.

Prerequisites: MUS-165
Corequisites: MUS-180

Additional Fees: Course fee applies.

MUS-170. Symphony Orchestra I. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-171. Symphony Orchestra II. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-172. Symphony Orchestra III. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-173. Symphony Orchestra IV. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.
MUS-176. Aural Comprehension I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
**Additional Fees:** Course fee applies.

MUS-177. Aural Comprehension II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
**Additional Fees:** Course fee applies.

MUS-178. Aural Comprehension III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
**Additional Fees:** Course fee applies.

MUS-179. Aural Comprehension IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
**Additional Fees:** Course fee applies.

MUS-180. Microphone Techniques. 2 Credits.
LECT 1 hr., LAB 2 hrs.
An in-depth study of the different techniques used for miking an array of instruments from woodwinds, brass and strings, to drums and electric instruments. Students study the design of dynamic and condenser microphones, special microphones used for certain instruments, sound comparison between different types of microphones and microphone placement on instruments.
**Prerequisites:** MUS-165
**Corequisites:** MUS-167
**Additional Fees:** Course fee applies.

MUS-182. Audio Production Techniques. 1 Credit.
LECT 4 hrs.
An examination of the production techniques used in the recording of contemporary and classic music. The course focuses on the development of critical listening skills, as well as the use of different recording and mixing techniques in an effort to enhance the overall production value of a recording. Students produce a sound-alike project in which they must emulate the sound of a preexisting recording.
**Prerequisites:** MUS-165, MUS-167
**Additional Fees:** Course fee applies.

MUS-184. Musical Theatre Production and Performance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Musical Theatre Production and Performance offers demanding training designed to prepare students for a career in musical theatre. Students participate in all aspects of the production from technical elements to a final performance.

MUS-201. Jazz Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-202. Jazz Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-203. Jazz Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-204. Jazz Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-209. Applied Music Secondary-Voice III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence planned to develop vocal ability. The course emphasizes vocal techniques, diction and sight-reading.
**Prerequisites:** MUS-110

LECT 1 hr., LAB 2 hrs.
Music students only. A four-semester sequence planned to develop vocal ability. This course emphasizes vocal techniques, diction and sight-reading.
**Prerequisites:** MUS-209 or permission of department chair.

MUS-214. Form and Analysis. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A study of larger forms which have evolved throughout music history. Emphasis is placed on score reading of symphonies, large choral works, operas, chamber works and sonata repertoire.
**Prerequisites:** MUS-117, MUS-118, MUS-215, MUS-216

MUS-215. Music Theory III. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
**Prerequisites:** MUS-118
**Corequisites:** MUS-225, MUS-209, MUS-137

MUS-216. Music Theory IV. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
**Prerequisites:** MUS-215
**Corequisites:** MUS-226, MUS-210, MUS-138

MUS-217. Music History and Literature to 1750. 3 Credits.
LECT 3 hrs.
An in-depth study of music in Western civilization from ancient times through the Baroque period. Music from each period is discussed and analyzed.

MUS-218. Music History and Literature From 1750. 3 Credits.
LECT 3 hrs.
A continuation of Music History and Literature from 1750. A study of music from the late Baroque through the Romantic period. Includes analysis of representative works.
MUS-220. Music Business II. 3 Credits.
LECT 3 hrs.
This course expands upon the concepts learned in MUS-166 Introduction to Music Business and delves deeper into the areas of marketing and promotion, CD packaging, creation of a business entity and website design for the purpose of self-promotion.
Prerequisites: MUS-166.

MUS-221. Chamber Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-222. Chamber Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-223. Chamber Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-224. Chamber Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-225. Applied Music Secondary-Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-126

MUS-226. Applied Music Secondary - Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-225

MUS-227. Operetta and Music Theatre I. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-228. Operetta and Musical Theatre II. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-229. Operetta and Musical Theatre III. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-230. Operetta and Musical Theatre IV. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-233. Independent Study in Music. 1 Credit.
LECT 1 hr.
For Music Students only. This course is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the faculty member and student and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-234. Independent Study in Music. 3 Credits.
LECT 3 hrs.
For Music Students only. Independent Study in Music is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-237. Cabaret Music Theatre. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-238. Cabaret Music Theatre II. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.
MUS-239. Cabaret Music Theatre III. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-240. Jazz Guitar. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is recommended for guitar majors, jazz ensemble guitarists or those with equivalent skills. It covers harmonic and melodic aspects of jazz improvisation in a solo or ensemble setting. Topics include modes, arpeggios and chord structure, and inversions of seventh chords in all keys. Students must already have a working knowledge of the guitar, i.e., bar chords, major/ minor scales, some experience with notes and chord symbols. While this is not a class for beginner guitarists, beginner jazz players are welcome.

MUS-241. Guitar Ensemble. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For guitar majors or those with equivalent skills (by permission of instructor or music instructor). Guitar technique and fingerboard mastery are discussed. Sight-reading is developed in class and individual projects assigned. Students explore the guitar chamber repertoire which includes duets, trios and quartets as well as other combinations (i.e., guitar with flute, violin or voice).

MUS-242. Cabaret Music Theatre IV. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-243. Musical Theatre Auditions. 3 Credits.
LECT 3 hrs.
This course introduces the students to the preliminary work involved in the techniques of auditioning. The protocol of auditioning, including resume, agents, casting directors, scene reading and actual vocal selections, are covered in class.

MUS-244. Independent Study in Electronic Music I. 1 Credit.
LECT 1 hr.
This course is an exploration of analog synthesis techniques and devices designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.
Prerequisites: MUS-112, MUS-124
Additional Fees: Course fee applies.

MUS-245. Independent Study in Electronic Music II. 1 Credit.
LECT 1 hr.
This course is an exploration of the computer-based music workstation and digital technology designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.
Prerequisites: MUS-112, MUS-124, MUS-244
Additional Fees: Course fee applies.

MUS-248. Enjoyment of Music. 3 Credits.
LECT 3 hrs.
Emphasis is placed on experiencing, discussing and realizing various musical styles throughout history to the present time. All music from the ancient to even today's most popular styles are covered, but with specific attention given to how to listen and appreciate each musical genre. Students may even be invited to contribute to the course content by bringing personally favored music to be studied.

MUS-249. Practicum. 1 Credit.
LECT 1 hr.
For Music Students only. Weekly lessons in a one-to-one or small group arrangement with a faculty member prepares the student in the techniques of professional music recording. Appropriate projects are assigned to help the individual student develop his or her recording skills in various situations and with various types of equipment. A finished project is produced by the student and judged in a jury session.
Prerequisites: MUS-165, MUS-167, MUS-180, MUS-182, MUS-259
Additional Fees: Course fee applies.

MUS-250. Internship in Music Recording. 1 Credit.
LECT 1 hr.
For Music students only. This course assigns the student to experience the actual working conditions in an established music recording studio facility. With the cooperation of the facility director, appropriate work projects are assigned and the student judged on his or her level of knowledge, expertise and confidence in the various aspects of the music recording business.
Prerequisites: MUS-165, MUS-167, MUS-180, MUS-182, MUS-259
Additional Fees: Course fee applies.

MUS-253. Independent Study in Music II. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-254. Independent Study in Music III. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-255. Independent Study in Music IV. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
MUS-258. Contemporary Music: 20th-21st Century. 3 Credits.
LECT 3 hrs.
A study of musical trends, idioms, styles and ascetics of the Classical Music, Jazz, Rock, Latin Music, and Film Music of the 20th and 21st centuries. In addition to the study of the literature, students will be broadly educated on the fundamental elements of music including melody, harmony, counterpoint, musical forms, texture, and orchestration. Students may be invited to contribute subject matter by bringing personally favored music of the 20th and 21st Centuries to be studied, analyzed and discussed.

MUS-259. Hard Disc Recording. 2 Credits.
LECT 1 hr., LAB 3 hrs.
Students learn about the operation and application of AVID Pro Tools hard disk recording and editing software. Topics include signal flow and routing, editing, fades and cross fades, digital signal processing, mixing, and automation.
Prerequisites: MUS-165, MUS-167 and MUS-180 or MUS-165, MUS-112 and MUS-124
Additional Fees: Course fee applies.

MUS-291. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.

MUS-292. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.
Nursing

Associate in Applied Science Degree

Graduates of the program are granted an Associate in Applied Science degree and attain the academic requirements for application for the National Council Licensure Examination for Registered Nurses (NCLEX-RN). The program offers a balance of general education and nursing courses to prepare students for Registered Nurse positions. These graduates have a significant role in the delivery of nursing care in hospitals, long-term care facilities, community agencies and other healthcare institutions.

Nursing Program Flyers are available from the Office of Admissions or the Nursing Department or visit the County College of Morris (CCM) website at http://www.ccm.edu/academics/degrees/nursing.aspx.

Students who wish to pursue admittance into the Nursing Program should apply to CCM and list Nursing as their requested major. Upon acceptance into the college, students are placed in the pre-professional phase and take all of the general education and science courses required for the Nursing major. Admission into the professional phase is not guaranteed once pre-professional course work is completed.

Students must file a Fundamentals of Nursing Professional Phase Application Form to be considered for acceptance into the professional phase. Acceptance into the professional phase is competitive. Student’s GPA must be 2.5 or higher, with a grade of “C” or better in all courses. The granting of a seat is based on the number of courses completed at CCM, the grades received and the overall GPA at the time the professional phase application is filed.

All students accepted into the professional phase (clinical) must meet additional requirements as set forth by the healthcare facilities that are utilized to provide clinical experience. Established technical standards that are the minimum fundamental abilities necessary to perform the activities requisite to obtaining credit for education and subsequent entry-level employment in the nursing profession must be met. In addition, students will undergo a Criminal History Background Check and Urine Drug Screening. Students must obtain malpractice insurance at their own expense, carry personal health insurance that provides coverage for accident and sickness, obtain health clearance and be CPR certified as a healthcare provider by the American Heart Association. All Nursing students are required to wear the County College of Morris Nursing uniform when in the clinical setting. Uniforms are obtained at the student’s expense. Transportation to the clinical facility must be provided by the individual student.

Several study tracks have been designed to accommodate individual learning needs. Please see the Nursing Program Flyer for an explanation of the study tracks. The curriculum requirements can be completed in six sequential semesters (excluding summer) of study. Part-time and evening schedules are also offered which will require additional semesters of study. For the professional (clinical) phase, a day class is admitted in the Fall Semester, and an evening class is admitted in the Spring Semester. The Fundamentals of Nursing Professional Phase Application Form must be filed in the Office of Records and Registration by September 15 for Spring Semester and March 1 for Fall Semester.

For more information, including the Nursing Program Flyer, visit the Nursing (http://www.ccm.edu/academics/divdep/hns/nursing) program website.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

Accreditation

The Nursing Program at the County College of Morris is fully accredited and approved by the New Jersey Board of Nursing. This accreditation qualifies graduates of the Nursing Program to sit for the National Council Licensure Examination for Registered Nurses (NCLEX-RN). The program is additionally accredited by the Accreditation Commission for Education in Nursing, Inc.

State of New Jersey Division of Consumer Affairs

New Jersey Board of Nursing
124 Halsey Street
Newark, New Jersey 07101
973-504-6430

Accreditation Commission for Education in Nursing, Inc.
3343 Peachtree Road, NE, Suite 850
Atlanta, Georgia 30326
404-975-5000
www.acenursing.org

Degrees

AAS Nursing

(P3800)

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Nursing Core

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<td>NUR-121 Fundamentals of Nursing</td>
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<td>NUR-123 Basic Medical/Surgical Nursing</td>
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<td>NUR-213 Maternal-Child/Mental Health Nursing</td>
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<td>NUR-224 Nursing Colloquium</td>
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Nursing Core Credits 47

Total Credits 67

Prerequisites and Co-requisites

NUR-121  Fundamentals of Nursing  6
Prerequisite: MAT-014, MAT-016 if indicated
Pre/Co-requisite: BIO-101
Co-requisite: NUR-105

NUR-123  Basic Medical/Surgical Nursing  10
Prerequisite: NUR-121, BIO-101
Pre/Co-requisite: BIO-102, CHM-117

NUR-213  Maternal-Child/Mental Health Nursing  10
Prerequisite: NUR-123, BIO-102, CHM-117
Pre/Co-requisite: BIO-215

NUR-214  Advanced Medical/Surgical Nursing  10
Prerequisite: NUR-213, BIO-215
Co-requisite: NUR-224

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

Science courses completed by students prior to entering Fundamentals of Nursing must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

A statewide criminal record search through the New Jersey State Police and a National Criminal History Database Search are performed on all students upon initial acceptance into the professional phase of the program and annually thereafter. If a record is found as a result of the criminal record searches, admission into the professional phase of the program is denied. If there is no record upon admission but subsequent searches result in a record found, the student will be immediately dismissed from the program.

When a graduate applies for licensure as a nurse in New Jersey, the New Jersey Board of Nursing requires a Criminal History Background Check. If the Criminal History Background Check reveals a criminal conviction, a review of the application by the Board of Nursing is required.

A Urine Drug Screening is performed on all students upon initial acceptance into the professional phase of the program. If the test is positive for illegal substances, admission into the professional phase of the program is denied. In addition, illegal use of prescribed substances will result in denial of admission into the professional phase of the program.

Faculty

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CH 315 973-328-5345 emascia@ccm.edu
NUR-012. Nursing Transition: Advanced Placement Status. 1 Credit.
LECT 1 hr.
This is a mandatory course required of all students granted advanced placement into NUR-123 Basic Medical/Surgical Nursing. Emphasis is placed on the conceptual framework of the County College of Morris Nursing program, use of the nursing process, communication skills, ethical and legal issues, and the role of the registered nurse. This course is the last component of the advanced placement process and is designed to facilitate a smooth transition for the student.
Prerequisites: Permission of department chair
Corequisites: NUR-105, NUR-123.

NUR-105. Foundations of Nursing. 1 Credit.
LECT 1 hr.
This course provides the foundational concepts on which nursing education and practice are built. Students apply basic knowledge of these concepts as they begin to learn the practice of nursing. Historical, sociocultural, ethical and legal tenets are studied. Students gain an appreciation for the profession of nursing as well as awareness of the responsibility and accountability expected. This course is offered as a traditional face-to-face, hybrid online or online course.
Prerequisites: Permission of department chair

NUR-106. Medical Terminology. 2 Credits.
LECT 2 hrs.
This course is an online class with assignments and quizzes. The course is open to any student interested in learning the basic construction of medical words. Students acquire a solid foundation to aid in retention of medical vocabulary and facilitate understanding of new terms. Prefixes, suffixes and root words are introduced in a logical manner. A brief outline of the anatomy and physiology of each body system is presented, followed by the related pathophysiology. Included are terms describing diseases, disorders and related surgical, diagnostic and treatment terms. Students become proficient in word building and recognition of medical terms as they relate to anatomy and physiology. Students become familiar with terminology relevant to pharmacology as well as psychiatry. Non-Nursing Majors may take this course.

NUR-121. Fundamentals of Nursing. 6 Credits.
LECT 3 hrs., LAB 3 hrs., CLIN 6 hrs.
This course serves as the foundation for all subsequent nursing courses. The nursing process is introduced with concentration on the assessment of man’s basic health needs, which are identified as psychosocial, elimination, rest and activity, safe environment, oxygen and nutrition. The development and use of fundamental nursing skills and interventions are included. Concepts of clinical decision-making skills are introduced. Learning experiences are planned, using the classroom, campus laboratory and community clinical facilities.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and MAT-011, MAT-014 or MAT-050 and MAT-016 and admission to Professional Phase of Nursing program
Corequisites: BIO-101, NUR-105
Additional Fees: Course fee applies.

NUR-123. Basic Medical/Surgical Nursing. 10 Credits.
LECT 6 hrs., CLIN 12 hrs.
This course focuses on the study of adults with a variety of commonly occurring medical-surgical problems that interfere with the ability to meet basic health needs. Students utilize the nursing process to prioritize and provide appropriate nursing interventions for patients with higher acuity. Students use assessment skills to develop appropriate nursing diagnoses, outcomes and plans of care. Related theory, therapeutic communications skills and nursing care skills are employed in the provision of patient care in clinical facilities. Clinical decision-making skills are further developed.
Prerequisites: BIO-101, NUR-105, NUR-121
Corequisites: BIO-102, CHM-117
Additional Fees: Course fee applies.

NUR-213. Maternal-Child/Mental Health Nursing. 10 Credits.
LECT 6 hrs., CLIN 12 hrs.
The focus of this course shifts from the study of the adult as an individual to that of the family and community. Concentration is placed on the health needs/problems of psychiatric and maternal/child patients. Utilization of the nursing process with special populations to address patient problems is provided across a range of healthcare settings. Knowledge of community, psychiatric, and maternal/child nursing is developed through clinical decision-making skills, group projects, case studies and clinical experiences.
Prerequisites: NUR-123, BIO-101, BIO-102, CHM-117
Corequisites: BIO-215
Additional Fees: Course fee applies.
NUR-214. Advanced Medical/Surgical Nursing. 10 Credits.
LECT 6 hrs., CLIN 12 hrs.
This course provides students with the ability to further develop and apply clinical decision-making skills to patient care. The PERSON approach is utilized to provide care for patients with health problems resulting when the ability to meet one or more health needs is severely compromised. Evaluation of the outcomes of care given is a significant focus. Appropriate learning experiences are planned involving patients with multiple acute and chronic problems using the classroom, campus laboratory and various health care facilities.
Prerequisites: NUR-213, BIO-215
Corequisites: NUR-224
Additional Fees: Course fee applies.

NUR-220. Pharmacology for the Health Professional. 3 Credits.
LECT 3 hrs.
This online course provides an overview of pharmacology with an emphasis on clinical application. The course is organized by drug classifications and emphasizes current usage, dosage recommendations, interactions, and implications for illness prevention and management. This course is useful for any professional who administers medications or who works with clients for whom medications are a treatment modality. Non-Nursing majors may take this course.

NUR-224. Nursing Colloquium. 1 Credit.
LECT 1 hr.
This course involves an examination of selected topics and issues that students in the final semester of the professional phase of the Nursing Program will experience as they transition from the role of student nurse to graduate nurse. Topics concerning professional development and preparation for the workplace are addressed. Ethical, legal and professional issues that impact the practice of the graduate nurse are examined.
Prerequisites: NUR-213
Corequisites: NUR-214.
Occupational Therapy Assistant

Associate in Science Degree

This program’s mission is to prepare Occupational Therapy Assistants (OTA) to be professionals who contribute to the health and well-being of individuals. Disease, injury, depression, stroke, advanced age and other challenges prevent people from participating independently in activities of daily living. An Occupational Therapy Assistant makes it possible for these people to achieve independence and improve their quality of life. This degree prepares students for employment in healthcare, educational and other community settings.

Graduates of an accredited OTA Program are eligible to sit for a national certification exam; and once certified, the graduate can obtain state licensure to practice as a Certified Occupational Therapy Assistant (COTA) in New Jersey.

This is a joint Associate in Science (A.S.) degree program in Occupational Therapy Assistant with the County College of Morris (CCM) and Rutgers, the State University of New Jersey. The curriculum includes a total of 74 credits. Thirty-two (32) General Education credits are completed at CCM and 42 additional credits of professional/clinical coursework is taken at Rutgers. Students completing the 32 required credits at CCM must complete a separate application into Rutgers at the Scotch Plains Campus to complete the 74 credits required for the A.S. in the Occupational Therapy Assistant Program. This is a highly competitive program. Students from CCM will be competing for admission to Rutgers with students from other institutions. Rutgers accepts only 20 students annually into the fall full-time program and only 10 students into the spring part-time program. Admission into Rutgers is based on: a minimum GPA of 2.5, two (2) Letters of Recommendation, 20 hours of OT Observation, an interview process, and an on-site writing component.

The Occupational Therapy Assistant (OTA) Program at Rutgers is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, Suite 200 Bethesda, MD 20814-3449. ACOTE’s telephone number c/o AOTA is 301-652-AOTA and its web address is www.acoteonline.org/ (http://www.acoteonline.org).

For more information, visit the Occupational Therapy Assistant (http://www.ccm.edu/academics/degrees/ota.aspx) website.

Degrees

AS Occupational Therapy Assistant
(P2155)

General Education Foundation

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<td>Developmental Psychology - the Human Lifespan</td>
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<td>General Education Courses</td>
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<tr>
<td>SOC-120</td>
<td>Principles of Sociology</td>
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</table>

Diversity Elective

General Education Foundation Credits: 32

Occupational Therapy Core

The professional phase consists of 42 credits to be completed at Rutgers.

Occupational Therapy Core Credits: 0

Total Credits: 32
Personal Trainer

Certificate of Achievement

This program provides entry-level training to those interested in a career as a personal trainer in the fitness industry. Students gain background information about fitness and health sufficient to take one of several Personal Trainer certification examinations offered by various national organizations such as the American Council on Exercise, the American College of Sports Medicine, the National Academy of Sports Medicine, the National Strength and Conditioning Association and the Aerobic Fitness Association of America. The curriculum follows the American College of Sports Medicine guidelines.

For more information, visit the Personal Trainer (http://www.ccm.edu/academics/degrees/personaltrain.aspx) website.

Certificates of Achievement

Certificate of Achievement - Personal Trainer

(P0950)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HES-104</td>
<td>Foundations of Personal Training</td>
<td>3</td>
</tr>
<tr>
<td>HED-115</td>
<td>Personal and Family Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HES-127</td>
<td>Weight Training</td>
<td>1</td>
</tr>
<tr>
<td>HES-126</td>
<td>Personal Fitness</td>
<td>1</td>
</tr>
<tr>
<td>HES-107</td>
<td>Program Design &amp; Implementation</td>
<td>3</td>
</tr>
<tr>
<td>HED-295</td>
<td>First Aid and Emergency Care</td>
<td>3</td>
</tr>
<tr>
<td>HED-283</td>
<td>Cardiopulmonary Resuscitation</td>
<td>1</td>
</tr>
<tr>
<td>HES-106</td>
<td>Personal Trainer Field Experience</td>
<td>1</td>
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<tr>
<td>Total Credits</td>
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</tbody>
</table>

The Personal Trainer Certificate of Achievement is awarded to students who achieve grades of C or better in all courses in the program.

Courses

HED-112. Drugs, Society and Human Behavior. 3 Credits.
LECT 3 hrs.
This course examines the effects drugs have on the individual and society, taking a critical look at the most recent scientific data drawn from medical, sociological and student research. Topics include, but are not limited to, neurophysiology, pharmacology and the demographics of drug use, legal issues, and treatment and prevention programs. Different types of drugs are examined.
Additional Fees: Course fee applies.

HED-115. Personal and Family Nutrition. 3 Credits.
LECT 3 hrs.
In this course, students study the relationships of nutrition and eating patterns to one's health, nutritive value and composition of foods, metabolism, functions and requirements of nutrients throughout life, and essentials of an adequate diet. Emphasis is placed on the practical application of nutrition concepts in everyday life.
Additional Fees: Course fee applies.

HED-128. Lifetime Wellness. 2 Credits.
LECT 1 hr., LAB 2 hrs.
This course is designed to provide students with the knowledge and skills necessary to make intelligent decisions about health and wellness. Topics include nutrition and weight management, substance abuse, stress management, fitness, cardiovascular disease and sexually transmitted diseases. Students engage in personally selected programs to improve wellness.
Additional Fees: Course fee applies.

HED-130. Mind-Body Health. 3 Credits.
LECT 3 hrs.
This course explores the relationship between the mind and the body. Emphasis is placed on relaxation, meditation, and yoga to enable students to reach a state of peace, calmness and self-awareness. Students explore the integration of the entire self in order to achieve an understanding and an awareness of their own selves and take control of their wellness.
Additional Fees: Course fee applies.

HED-132. Stress Management. 1 Credit.
LECT 1 hr.
This course provides students with an understanding of the basic principles of the stress response, the General Adaptation Syndrome, stressors and stress management. Students participate in physical and cognitive exercises designed to reduce stress.
Additional Fees: Course fee applies.

HED-133. Weight Management. 1 Credit.
LECT 1 hr.
This course covers information about lifetime weight management. The role of diet, exercise, behavior modification and stress management and their relationship to weight management are emphasized. Students analyze diets, set goals and apply a weight management program to themselves throughout the course.

HED-283. Cardiopulmonary Resuscitation. 1 Credit.
LAB 2 hrs.
This course is taught according to American Heart Association (AHA) guidelines. Students learn about heart disease prevention, early recognition of heart attack and stroke, early access to Emergency Medical Services, and recognition and treatment for respiratory arrest, cardiac arrest and obstructed airway emergencies. Students who successfully complete the requirements will receive an AHA CPR card (BLS for Healthcare Provider CPR). This course is available through the Division of Corporate and Community Programs. Students enrolled in the majors of Nursing, Radiography, Respiratory Therapy, Exercise Science, and Early Childhood Education may request that they receive 1 credit toward their HED/HES requirement. Students must present a valid American Heart Association CPR card (BLS for Healthcare Provider CPR) to the Office of Records and Registration to receive credit. Course fees do not represent income to the AHA or any of its components.
Additional Fees: Course fee applies.
HED-286. Personal Health and Wellness. 3 Credits.
LECT 3 hrs.
This course examines current health and wellness topics that have an impact on the individual in today's society. Emphasis is on a wellness approach, examining the physical, emotional, intellectual, social and spiritual dimensions of health. Students engage in evaluations of their own wellness behaviors and investigate in detail at least one health issue of personal significance. (There is no substitution for this course in programs that require it for degree completion.)
**Additional Fees:** Course fee applies.

HED-293. Special Topics in Health Education. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Health Education. Topics may differ each time the course is offered. Students should consult the department chair for further information.
**Prerequisites:** A three-credit introductory course in Health Education.

HED-294. Special Topics in Health Education. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Health Education. Topics may differ each time the course is offered. Students should consult the department chair for further information.
**Prerequisites:** A three-credit introductory course in Health Education.

HED-295. First Aid and Emergency Care. 3 Credits.
LECT 3 hrs.
A basic course in first aid which acquaints students with information about prevention of accident and injury and about emergency assessment, recognition and treatment of trauma and sudden illnesses. Upon successful completion of the requirements, the student will receive First Aid certification.
**Additional Fees:** Course fee applies.

HES-104. Foundations of Personal Training. 3 Credits.
LECT 3 hrs.
This comprehensive class is ideal for anyone preparing for the ACSM, NASM or ACE Personal Trainer exam and those who want to pursue a career in personal training. Course content includes anatomy, applied exercise science, kinesiology, professional roles and responsibilities. ACSM course curriculum is followed. Open to Personal Trainer Certificate of Achievement (Curriculum 0950) students only.
**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

HES-106. Personal Trainer Field Experience. 1 Credit.
LAB 1 hr.
This course provides Personal Trainer Certificate of Achievement students with the opportunity to work with clients in the field. Students are linked with professionals in health clubs and commercial and corporate fitness centers who mentor their progress. Arrangements for this field experience must be coordinated through the field experience instructor. Students must accomplish a minimum of 40 hours in one semester in their field experience and write a report of the experience.
**Prerequisites:** HES-104, open to Personal Trainer Certificate of Achievement students only.

HES-107. Program Design and Implementation. 3 Credits.
LECT 3 hrs.
This course provides students with the practical application of current testing procedures and instrumentation used in exercise testing. Students learn to perform and interpret the basic measurement protocols for cardiorespiratory endurance, muscular strength and endurance, flexibility, body composition, and blood pressure. Students learn the principles related to exercise prescription, develop the necessary skills to design and implement training programs as they relate to the components of fitness. Safeguards and effectiveness for all fitness levels are addressed.
**Prerequisites:** HES-104, open to Personal Trainer Certificate of Achievement students only
**Additional Fees:** Course fee applies.

HES-111. Introduction to Exercise Science. 3 Credits.
LECT 3 hrs.
This course is recommended in the first semester. This is an introductory course to acquaint students with the development and structure of the field of exercise science. The current scientific development of the field is stressed, with emphasis on basic exercise physiology, health and fitness. There is a 20-hour internship requirement for this course. Open to Exercise Science majors only.
**Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

HES-121. Aerobic Exercise. 1 Credit.
LAB 2 hrs.
This course provides the student with the underlying principles of cardiovascular fitness and an opportunity to participate in aerobic activities designed to improve cardiovascular fitness, firm muscles, reduce fat and cope with stress.
**Additional Fees:** Course fee applies.

HES-125. Stretching and Strengthening. 1 Credit.
LAB 2 hrs.
This course provides a thorough presentation of exercises for improving strength and flexibility without the need for special equipment. Emphasis is on exercising safely and learning the importance of strength and flexibility in conditioning, injury prevention and rehabilitation. It is designed to give students the tools with which to create a personal exercise program. Students need to supply their own exercise mats.
**Additional Fees:** Course fee applies.

HES-126. Personal Fitness. 1 Credit.
LAB 2 hrs.
Students design and practice an exercise program that develops selected components of physical fitness. Each student undertakes assessments of various components of fitness.
**Additional Fees:** Course fee applies.

HES-127. Weight Training. 1 Credit.
LAB 2 hrs.
Basic principles of resistance (weight) training are taught, emphasizing training for general conditioning. Training programs for major muscle groups are developed and practiced. Equipment used includes free weights and some machines.
**Additional Fees:** Course fee applies.
HES-128. Yoga. 1 Credit.
LAB 2 hrs.
This is an introductory course in yoga covering basic hatha yoga postures and exercises. Breathing techniques, flexibility and muscular endurance are enhanced. The course helps relieve stress and develop a sense of peacefulness and tranquility while improving fitness. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.

HES-129. Self-Defense. 1 Credit.
LAB 2 hrs.
This course provides students with the knowledge and skills to judge potential threats and react swiftly to defend themselves. Social and psychological effects of violence are discussed, along with legal issues of self defense. The basic techniques of Tae Kwon-Do, Jiu-Jitsu and Aikido are introduced for everyday usage. A martial arts attitude is developed.
Additional Fees: Course fee applies.

HES-130. Tai Chi. 1 Credit.
LAB 2 hrs.
Tai Chi is a low-impact form of oriental exercise that increases energy, balance and overall health. Total mind-body interaction is emphasized. This course is a gentle means to contribute to overall health and fitness.
Additional Fees: Course fee applies.

HES-131. Pilates. 1 Credit.
LAB 2 hrs.
Pilates is a form of exercise that conditions the muscles through specific strength exercises without creating bulk. Based on the system introduced by Joseph Pilates over 70 years ago, exercises are done on both the mat and machines. Emphasis is on the core strength and flexibility of the abdomen and back, as well as other major body areas. Pilates is an exercise system that also concentrates on mind-body connection and correct postural alignment to gain optimal health and fitness. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.

HES-141. Personal Challenge I. 1 Credit.
LAB 2 hrs.
This activity course focuses on the importance of reaching beyond the individual and utilizing group resources to solve problems through trust, teamwork, communications, self-esteem building, group problem-solving skills, decision making and fun. Students execute safely a series of adventure activities involving wall climbing, rope hanging, game playing and cable walking in order to enable the group to cross real and imaginary boundaries. All activities are individualized so that any student may successfully participate. Taught off-campus.
Additional Fees: Course fee applies.

HES-161. Aquatic Fitness. 1 Credit.
LAB 2 hrs.
This is an exercise course in the pool designed for the student who wants an alternative to land exercise. The course provides the skills and knowledge to develop an overall aquatic workout to suit individual needs, especially for those who may require non-weight-bearing exercise.
Additional Fees: Course fee applies.

HES-162. Basic Swimming. 1 Credit.
LAB 2 hrs.
This course is designed for the non-swimmer or beginner swimmer who has had little or no instructional experience and who may feel uncomfortable in the water. Through this course, one gains basic swimming and diving skills progressing from shallow to deepwater swimming. The National American Red Cross Swimming Levels I-III is covered.
Additional Fees: Course fee applies.

HES-182. Golf I. 1 Credit.
LAB 2 hrs.
A beginner's study and practice of the fundamental skills and basic rules of the game of golf. Topics include the make-up of the course, the grip, swing and stance, the equipment, and the rules. A portion of the course is held off campus at local golf facilities.
HES-184. Tennis. 1 Credit.
LAB 2 hrs.
An introductory course which covers the basic strokes, strategy and rules of the game of tennis. Emphasis is placed on the instruction, practice and utilization of skills and rules in actual match situations. Students must supply their own tennis rackets and balls.
Additional Fees: Course fee applies.

HES-185. Badminton. 1 Credit.
LAB 2 hrs.
A beginning course which introduces the student to the basic strokes, rules and fundamental strategies of the game of badminton. Emphasis is placed on the utilization of newly acquired skills in game situations.
Additional Fees: Course fee applies.

HES-187. Volleyball. 1 Credit.
LAB 2 hrs.
This course develops techniques, skills and strategies of volleyball. Emphasis is on the development of the basic skills essential for success and enjoyment.

HES-211. Kinesiology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course emphasizes the analysis of the principles of movement through human anatomical design. Major joints of the body, their actions and the muscles that do those actions are stressed. Application to physical exercise is stressed in lab work on strength, endurance and potential motion of major joints.
Prerequisites: BIO-101
Additional Fees: Course fee applies.

HES-212. Exercise Physiology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course includes the study of human responses and adaptations to exercise of varying levels of stress and intensity. Major topics include bioenergetics, the physiology of the circulatory, respiratory, muscular and nervous systems as they apply to exercise, and the underlying physiological basis of fitness. Laboratory experiences illustrate practical application of theoretical content with hands-on experiences to measure and apply what is learned in the lecture component of the course.
Prerequisites: BIO-101, BIO-102 and HES-111, open to Exercise Science majors only
Additional Fees: Course fee applies.
**HES-213. Exercise Measurement and Prescription. 3 Credits.**
LECT 2 hrs., LAB 3 hrs.
This course stresses the appropriate measurement of various aspects of human exercise. Measurement of body composition, cardiovascular efficiency, muscular strength and endurance and other physiological parameters are taught and practiced. Students learn how to develop individualized and properly designed exercise prescriptions for adults, including special populations.

**Prerequisites:** HES-212 (minimum grade of C) Open to Exercise Science majors only

**Additional Fees:** Course fee applies.

**HES-291. Special Topics in Exercise Science. 1 Credit.**
LAB 2 hrs.
An examination of selected topics or issues in Exercise Science. Topics may differ each time the course is offered. Students should consult the department chair for further information.

**Prerequisites:** An introductory course in Exercise Science.

**HES-292. Special Topics in Exercise Science. 1 Credit.**
LAB 2 hrs.
An examination of selected topics or issues in Exercise Science. Topics may differ each time the course is offered. Students should consult the department chair for further information.

**Prerequisites:** HES-111.
Photography Technology

Associate in Applied Science Degree

The Photography Technology program provides graduates with entry-level employment skills in the rapidly changing professional photography field. Following a foundation year of basic photography, digital photography and general education, the second year includes specialized courses in lighting, post production techniques and color management. The emphasis is on hands-on experience to develop both the creative ability and the technical skills essential to photography careers. The Photography Technology degree has a highly successful transfer rate to local and national four-year colleges and universities.

For more information, visit the Photography Technology (http://www.ccm.edu/academics/degrees/phototech.aspx) website.

Degrees

AAS Photography Technology
(P3550)

General Education Foundation

Communication
- ENG-111 English Composition I
- ENG-112 English Composition II

Math-Science-Technology
- Choose from General Education course list
  - Mathematics (3/4 CR)
  - Laboratory Science (4 CR)
  - Technology (0/1 CR)

Social Science or Humanities
- Choose from General Education course list

General Education Courses
- PHO-113 History of Photography

General Education Foundation Credits 25-27

Photography Technology Core

PHO-115 Photography I
PHO-116 Photography II
PHO-112 Equipment, Materials and Processes
PHO-119 Contemporary Photography
PHO-117 Color Photography I
PHO-204 Digital Imaging I
PHO-213 Documentary Photography
PHO-216 Studio Lighting Techniques
PHO-224 Digital Imaging II
PHO-226 Portfolio Preparation
PHO-227 Professional Studio Photography
ART-130 Two Dimensional Design
ART-122 Drawing I

Photography Technology Core Credits 39

Total Credits 64-66

Faculty

Nieves Gruneiro
Assistant Professor, Photography Technology
M.F.A., Mason Gross School of the Arts, Rutgers University
B.F.A., New Jersey City University
DH 201B 973-328-5435 ngruneiro@ccm.edu

Hrvoje Slovenc
Assistant Professor, Photography Technology
M.F.A., Yale School of Art
B.A., The City College of the CUNY
DH 201B 973-328-5440 hsolvenc@ccm.edu

Courses

PHO-110. Photography Appreciation. 3 Credits.
LECT 3 hrs.
Through lectures, discussions, written analysis, projects and presentations, the student will gain an understanding and appreciation of the global and cultural impact of photography. Students focus on the formal development of photography and the role it plays in social and cultural production, gaining insight into how photographs produce visual representations across cultures and reflect social values. Students learn the fundamental visual elements of photographic form, critical skills necessary to interpret a variety of visual representations and enhancing visual literacy. Note: This is a lecture based course, not a studio art course and is not acceptable for majors of Photography, Graphic Design, or Visual Arts.

PHO-111. Introduction to Photography. 3 Credits.
LECT 3 hrs.
Through lectures, discussions, written analysis, projects and presentations, students gain an understanding and appreciation of the global and cultural impact of photography. Students focus on the formal development of photography and the role it plays in social and cultural production, gaining insight into how photographs produce visual representations across cultures and reflect social values. Students learn the fundamental visual elements of photographic form, critical skills necessary to interpret a variety of visual representations and enhancing visual literacy. This is a lecture based course, not a studio art course and is not acceptable for majors of Photography, Graphic Design, or Visual Arts.

PHO-112. Equipment, Materials and Processes. 3 Credits.
LECT 3 hrs.
A non-studio technology course covering digital photographic processes. The range of topics for this course include data asset management, professional workflow, color management and basic scientific principles regarding optics, the physics of light, camera design and reproduction problems. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115 and MAT-011.

PHO-113. History of Photography. 3 Credits.
LECT 3 hrs.
A survey of photographic history from its origin to the present day. Topics include the invention of photography, the photograph as document, the photograph as art, the natural landscape, the portrait, color photography and contemporary photography. Course requirements may include extensive use of Blackboard and other online components.
Prerequisites: ENG-025 or ENG-022 or ENG-007.
PHO-115. Photography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A beginning photography studio course emphasizing the fundamentals of photographic language, digital camera systems and creative visual problem solving. Students become familiar with the concept of the digital darkroom using image editing photographic production tools. Course requirements may include extensive use of Blackboard and other online components, including, but not limited to, photo sharing sites. The current software program used in this course is Adobe Lightroom, which is subject to change based on technology advancement and availability. Note: Each semester there will be a section of PHO-115 designated for Photography Technology majors which will require that students own or have unrestricted access to a DSLR (35mm digital camera). No point and shoot cameras are allowed in this course section.
Additional Fees: Course fee applies.

PHO-116. Photography II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An intermediate black and white photography course introducing the student to medium and large format camera systems in both commercial and fine art applications. Darkroom and digital technologies are covered in this course.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-117. Color Photography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introduction to color photographic materials. Topics include color perception, composition/design and color technology. Color theory, conventional image processing and digital image processing are covered. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-118. Color Photography II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An advanced studio course in color photographic theory. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-117
Additional Fees: Course fee applies.

PHO-119. Contemporary Photography. 3 Credits.
LECT 3 hrs.
An in-depth look at photography and photographers practicing since 1950. Students gain an understanding of the philosophies that have shaped the current uses of the photographic image. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.

PHO-204. Digital Imaging I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introductory studio course providing an overview of various digital post production software applications used for digital photography. Non-destructive vs. destructive image manipulation, color management, workflow and image compositing basics are several of the topics covered in this course. Current software applications employed in the course include Adobe Photoshop and Adobe Lightroom. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-213. Documentary Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introduction to the methods, history, problems and opportunities of in-depth, fact-based photographic assignments and essays. Students learn how to plan, engage and complete in-depth documentary and journalistic photographic projects. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-215. Large Format Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Note: Students will be required to purchase an appropriate light meter. The operation and basic technical mastery of the professional large format camera with an introduction to studio lighting. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-216. Studio Lighting I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introductory studio course covering the basic concepts and manipulation of artificial lighting for a range of subject matter, camera formats and applications. The course focuses on developing problem-solving skills that address technical and creative methods of crafting an image to achieve a desired goal. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115 and PHO-204
Additional Fees: Course fee applies.

PHO-224. Digital Imaging II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This studio course is designed for experienced digital imaging users. Focusing on a semester long project, students learn how different media influence the way we see and capture the world. As technology and the role of the photographer evolve, methods of manipulation and presentation are explored. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-204
Additional Fees: Course fee applies.
PHO-226. Portfolio Preparation. 3 Credits.
LECT 3 hrs.
Students prepare a final portfolio, in both print and digital formats, showcasing examples of photographic skills acquired during their course of study in the Photography Technology program. Students focus on presentation, craftsmanship and the development of a personal style. Various outlets and methods of presentation are explored. Formal and informal critiques help students define strengths and career goals. This course should be taken in the student's final semester. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-216
Corequisites: PHO-227
Additional Fees: Course fee applies.

PHO-227. Professional Studio Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An advanced studio course focusing on the development of concepts and ideas within a studio environment through a variety of assignments. Emphasis is placed on developing light design strategies for various applications ranging from portraiture to architecture. Technical competency and professionalism are key components of this course. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-204 and PHO-216
Additional Fees: Course fee applies.

PHO-228. Cooperative Work Experience-Photography. 3 Credits.
COOP 3 hrs.
Open to Photography Technology (3550) majors only. Students work in photography-related jobs, receiving training. Photography Technology faculty members individually supervise students.
Prerequisites: PHO-116
Corequisites: PHO-229.

PHO-229. Cooperative Work Experience- Photography Related Class. 1 Credit.
LECT 1 hr.
Open to Photography Technology (Program 3550) majors only. Related class designed to supplement Cooperative Work Experience. Weekly meetings include discussion, written assignments and critical analysis of the work experience.
Prerequisites: PHO-116
Corequisites: PHO-228.

PHO-290. Independent Study I in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives and submitting a summary project.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

PHO-291. Special Topics in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Topics in photography which are not included in the regularly scheduled curriculum. May include studio work, technical topics and/or critique.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-292. Special Topics in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Studio work in selected topics or issues in photography.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-293. Special Topics in Photography. 1 Credit.
LECT 3 hrs.
Studio work in selected topics or issues in photography.
Prerequisites: PHO-115
Additional Fees: Course fee applies.
Public Administration
Associate in Science Degree

This curriculum is designed for students interested in careers in public service at the federal, state, county and municipal levels or in nonprofit and private organizations involved in public service. It is also an appropriate prelaw program. This transfer program is appropriate for a student seeking a bachelor's degree in public administration or political science. In today’s complex society, preparation, training and qualification for selection and progression in a career in public service requires that the individual be knowledgeable in the social sciences and humanities, as well as trained in the specialized skills of the profession.

Partnerships
The County College of Morris and Rutgers University-Newark have partnered to allow CCM graduates and others who hold associate degrees to earn Rutgers baccalaureate degrees at CCM’s Randolph and Morristown locations, including degrees in Nonprofit and Public Administration.

Articulation Agreements
Students should check with the Transfer Office about other articulation agreements with this program.

For more information, visit the Public Administration (http://www.ccm.edu/academics/degrees/publicadmin.aspx) website.

Degrees

AS Public Administration
(P2260)

General Education Foundation

Communication 6
ENG-111 English Composition I
ENG-112 English Composition II

Math-Science-Technology 10-11
CMP-203 Computer Software Applic. (MS Office)
or CMP-110 Introduction to Data Processing
Mathematics Elective

Laboratory Science Elective

Social Science 3
SOC-120 Principles of Sociology

Humanities 3
HIS-209 History of American Women
or HIS-204 History of the African American Experience
or HIS-167 Twentieth Century American History - U.S. II

Social Science/Humanities 3

POL-245 Comparative Government

General Education 6

General Education Elective

COM-109 Speech Fundamentals

General Education Foundation Credits 31:32

Public Administration Core

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<tr>
<th>Course</th>
<th>Title</th>
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<tr>
<td>POL-111</td>
<td>American Government</td>
<td>3</td>
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<tr>
<td>POL-231</td>
<td>State and Local Government</td>
<td>3</td>
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<tr>
<td>PUB-111</td>
<td>Public Administration</td>
<td>3</td>
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<tr>
<td>POL-222</td>
<td>Constitutional Law</td>
<td>3</td>
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<tr>
<td>PSY-113</td>
<td>General Psychology</td>
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<td>or PUB-250</td>
<td>Field Experience-Public Administration</td>
<td>3</td>
</tr>
<tr>
<td>HIS-203</td>
<td>History of Minorities in U.S.</td>
<td>3</td>
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<tr>
<td>ACC-110</td>
<td>Elements of Accounting</td>
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<tr>
<td>or ACC-111</td>
<td>Principles of Accounting I - Financial Accounting</td>
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<td>ECO-211</td>
<td>Principles of Economics I</td>
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<td>ECO-212</td>
<td>Principles of Economics II</td>
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<tr>
<td>BUS-213</td>
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Public Administration Core Credits 30

Total Credits 61-62

Faculty

Dr. Jack Bernardo
Associate Professor, Political Science
Special Projects, Public Administration
Ph.D., University of Tennessee
M.P.A., University of Tennessee
B.A. Syracuse University
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Courses

POL-111. American Government. 3 Credits.
LECT 3 hrs.
A study of the myths and realities of the American political system. The course focuses on the constitutional development of the American system of government, the political, policymaking and implementing structures of American government, and the problem of representative government in the United States. Consideration is given to contemporary domestic and foreign policy issues.

POL-222. Constitutional Law. 3 Credits.
LECT 3 hrs.
This is a survey course which examines the constitutional development of the U.S., the growth of American constitutional doctrine and law, and the judicial process within which judicial decisions are formulated and given the force of law. The constitutional basis for the government’s powers and the liberties of the individual are examined within this framework. Emphasis is given to landmark U.S. Supreme Court decisions.
Prerequisites: POL-111.

POL-231. State and Local Government. 3 Credits.
LECT 3 hrs.
A survey of the organizational structure and policies of local, county and state governments, with special emphasis on New Jersey. Students become acquainted with many of the major issues facing metropolitan, urban and suburban governing bodies.
POL-240. International Politics. 3 Credits.
LECT 3 hrs.
An introduction to the nature and problems of international politics. Analysis and consideration is given to the development and contemporary status of nation-states, their relationships and the elements of power politics. Emphasis is given to problems of war and peace, the nature of conflict and the various approaches to world peace.

POL-245. Comparative Government. 3 Credits.
LECT 3 hrs.
An examination of the variety of governmental systems, both western and non-western, whose importance is reflected in the increasing interdependent nature of the world community. The political systems of the traditional European powers (Great Britain, Germany and Russia) and strategically important non-western nation-states (Japan, China, India and Mexico) are reviewed. Trends in government in the developing countries are studied as well.

POL-270. Civil Liberties-Basic Rights and Freedom. 3 Credits.
LECT 3 hrs.
An analysis and examination of individual rights within a democratic society. Focus is on such major issues as freedom of expression and religion, political and racial equality, criminal justice, the Bill of Rights and its applicability to the states. The role of the judiciary, particularly the U.S. Supreme Court, is analyzed.

POL-291. Special Topics in Political Science. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in political science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Political Science.

POL-292. Special Topics in Political Science. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in political science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Political Science.

PUB-111. Public Administration. 3 Credits.
LECT 3 hrs.
A survey of the practices and political relationships in public administration. Leadership, decision-making, personnel, and budgetary functions within governmental agencies are examined. The role of the public administrator in contemporary government is analyzed. The implementation of public policy at all levels of government, with emphasis on state and municipal institutions, is covered.

PUB-250. Field Experience-Public Administration. 3 Credits.
LECT 3 hrs.
Public Administration majors only. The student is expected to participate in the activities of an administrative agency under the joint supervision of a faculty member and the agency. Introduction and review sessions are conducted by a faculty member.
Prerequisites: PUB-111.

PUB-291. Special Topics in Public Administration. 3 Credits.
LECT 3 hrs.
An examination of selected topics of issues in Public Administration. Topics differ each time the course is offered. Students should consult the department chair for further information.

PUB-292. Special Topics in Public Administration. 3 Credits.
LECT 3 hrs.
An examination of selected topics of issues in Public Administration. Topics differ each time the course is offered. Students should consult the department chair for further information.
Public Health

Associate in Science Degree

The Associate in Science Degree in Public Health is offered through a consortium of the County College of Morris, Brookdale Community College, Mercer County Community College, and Middlesex County College. The program is designed to address the specific needs of students who are interested in transferring to four-year institutions to earn a baccalaureate degree or higher in public health. Students will develop background knowledge in public health through introductory coursework and training in laboratory science.

Public Health focuses on the health of the entire community rather than the individual. The health of the community involves populations at risk, education and prevention programs, methods of assuring access to appropriate and cost-effective care, and the formation of sound public policies. Public health professionals play a vital role in improving community health issues such as the quality of life for the elderly, drug, alcohol, and tobacco abuse, nutrition, food safety, water quality, vaccination programs, bio-terrorism, natural disasters, and infectious diseases.

According to the U.S. Bureau of Labor Statistics (BLS) data and projections, areas in healthcare have a positive growth rate. Predictions indicate that the healthcare industry will produce 3.2 million new jobs in the U.S. by 2019, more than any other industry. The BLS attributes the tremendous growth to advancement in medicine and medical technology in addition to the resultant increase in life expectancy. Significant growth in fields related to public health include health educators, epidemiologists, environmental science and protection technicians, medical and health service managers, environmental scientists and specialists, biological technicians, and occupational health and safety specialists.

Through a strong general education foundation and public health core, students in the program will begin to develop competencies for healthcare professionals. These competencies include analytic/assessment skills, policy development program planning skills, communication skills, cultural competency skills, community dimensions of practice skills, public health science skills, financial planning and management skills, and leadership and systems thinking skills. PBH-101, Principles of Public Health, provides a broad overview of the many facets of public health.

Graduates of the program will be able to achieve the following outcomes: 1) demonstrate scientific foundation knowledge and skills appropriate for student seeking advanced study in the field of public health; 2) apply the scientific method of inquiry to gather and analyze data and use information relevant to major local, national and global health challenges; 3) conduct a literature search on health issues using a variety of academic and public resources; and 4) engage in collaborative approaches for improving the population’s health.

Degrees

AS Public Health

(P2156)

General Education Foundation

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Public Health Core

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Total Credits 61-62

Faculty

Add faculty here

Courses

PBH-101. Principles of Public Health. 3 Credits.

LECT 3 hrs.

This course provides a broad overview of the many facets of public health, including, but not limited to historical perspectives, communicable disease, epidemiology, health policy, environmental health, emergency preparedness, and social, cultural, and behavioral aspects of health across the life span. It will describe public health infrastructure, delivery of services at the local, state and national levels, and the core competencies for public health professionals.
Radiography

Associate in Applied Science Degree

The Radiography program is a day program; there are no evening Radiography courses offered. A new Radiography class is selected for each Fall Semester.

The Associate in Applied Science (AAS) degree in Radiography is designed to provide students with the knowledge and skills to enter the field of radiography. The curriculum includes a general education foundation and 45 credits in courses pertinent to the development of competency in diagnostic radiography.

The Radiography program seeks to provide each student with the didactic, laboratory and clinical education to become a qualified entry level Radiologic Technologist. The program provides each student the opportunity to develop technical skills, enhance critical thinking and strengthen interpersonal behavior through educational activities.

The pre-professional phase is for students who are currently not enrolled in or eligible for admission into the professional phase of the Radiography program. Students in this phase can take all of the general education and speech fundamentals required for the Radiography major. They can study full or part-time and in the day or evening. In addition, summer courses can also be taken. Admission into the professional phase is not guaranteed once pre-professional course work is completed.

Acceptance into the professional phase is competitive. A student’s GPA must be 2.5 or higher. The granting of a seat is based on the number of general education courses completed, the grades received and the overall GPA at the time the candidate applies to the program. Applicants are ranked according to grades achieved in the required pre-professional courses. Values are assigned to grades achieved utilizing a point system. Science grades are weighted more heavily than non-science courses. All science courses must be less than seven years old. Grades for all prerequisite courses must be C or better. Students who have taken science courses prior to this seven-year cutoff must prove competency by testing provided at CCM or retake the course.

All students accepted into the professional (Radiography courses) phase of the program will undergo an annual Criminal History Background Check and Urine Drug Screening, annual flu vaccine, obtain malpractice insurance at their own expense, obtain health clearance and be certified in CPR by the American Heart Association. In addition, students in the professional phase of the program are required to carry personal health insurance that provides coverage for accidents and sickness.

A statewide criminal record search through the New Jersey State Police and a National Criminal History Database Search are performed on all students upon initial acceptance into the professional phase of the program and annually thereafter. If a record is found as a result of the criminal record searches, admission into the professional phase of the program is denied. If there is no record upon admission but subsequent searches result in a record found, the student will be immediately dismissed from the program.

The Radiography program maintains a zero-tolerance policy regarding substance abuse. The program faculty requires Radiography students to provide safe, effective and supportive care in the clinical setting. To fulfill this purpose, Radiography students must be free of chemical impairment during participation in any part of the Radiography program including classroom, laboratory and clinical settings. A Urine Drug Screening is performed on all students performing their clinical education at any of the program’s clinical affiliates upon initial acceptance into the professional phase of the program. Failure to submit to the Urine Drug Screening will result in dismissal from the program. If the test is positive for illegal substances, admission into the professional phase of the program is denied. In addition, illegal use of prescribed substances will result in denial of admission into the professional phase of the program.

All Radiography students are required to wear the County College of Morris Radiography uniform when in the clinical setting. Uniforms are obtained at the student’s expense.

Graduates of the two-year program are eligible to apply for New Jersey State licensure and for certification as a Registered Technologist by the American Registry of Radiologic Technologists.

The Radiography program is accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT, 20 N Wacker Drive, Suite 2850, Chicago, IL 60606-3182; (312-704-5300) and the State of New Jersey Department of Environmental Protection – Radiologic Technology Board of Examiners P.O. Box 415, Trenton, NJ 08625; (609-984-5890).

The JRCERT publishes guidelines that a Radiography program must meet in order to be accredited. In order to be awarded and maintain accreditation status, the program must be in compliance with these guidelines. Since January 1, 2014, the Standards and Guidelines of an Accredited Educational Program for the Radiographers has been the guideline utilized for accreditation.

A detailed description of the program’s policies and procedures can be found in the Radiography Program Student Handbook available in the program’s office in the Department of Allied Health and in the Admissions Office. The program’s pregnancy policy can be found in the Radiography Program Student Handbook.

Due to continual program revisions mandated by the accrediting agencies, students should consult their academic advisors when selecting courses.

For more information, visit the Radiography (http://www.ccm.edu/academics/degrees/radiography.aspx) website.

Degrees

AAS Radiography

(P3840)

General Education Foundation

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Social Science or Humanities 3
Courses

RAD-100. Introduction to Radiography. 2 Credits.
LECT 2 hrs.
Introduction to Radiography is the study of the fundamental elements of the health system, patient care and the profession of Radiography. The concepts of ethics, law, medical asepsis, vital signs, communicable disease and medical emergencies are presented in this course.
Prerequisites: Admission to Professional Phase and permission of department chair
Corequisites: RAD-104, RAD-107, MAT-140.

RAD-104. Principles of Radiography I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is designed to provide students with the necessary theory, concepts and hands-on experience in performing specific diagnostic procedures. Patient positioning, equipment manipulation, radiation protection techniques, appropriate patient care techniques and critique of radiographic images are presented in this course. Body areas covered include chest, abdomen, upper and lower extremities.
Prerequisites: Admission to Professional Phase; permission of department chair
Corequisites: BIO-101, RAD-100, RAD-107, MAT-140
Additional Fees: Course fee applies.

RAD-107. Radiography Clinical Practice I. 1 Credit.
CLIN 8 hrs.
This course provides students with an opportunity to apply concepts learned in Radiography I and Introduction to Radiography. Some of the tasks include operating equipment appropriately, applying basic patient care and positioning the patient accurately.
Prerequisites: Admission to Professional Phase - permission of department chair
Corequisites: RAD-100, RAD-104, MAT-140
Additional Fees: Course fee applies.

RAD-110. Radiation Biology and Physics. 3 Credits.
LECT 3 hrs.
The study of physics and electronics involved in the production, use and control of the various electromagnetic energies used in medical and diagnostic applications.
Prerequisites: RAD-100, RAD-104, RAD-107, MAT-140
Corequisites: RAD-114, RAD-117.

RAD-114. Principles of Radiography II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of Radiography II reinforces basic concepts presented in Principles of Radiography I. Body areas covered include the hip, pelvis, bony thorax, entire spine, upper and lower GI tract, biliary system and the urinary system.
Prerequisites: RAD-100, RAD-104, RAD-107, MAT-140
Corequisites: BIO-102, RAD-110, RAD-117
Additional Fees: Course fee applies.

Faculty

Denise Vill'Neuve, RT (R) (CT) (M)
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Associate Professor, Radiography
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Science courses completed by students prior to entering a Radiography course must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.
RAD-107. Radiography Clinical Practice II. 2 Credits.
CLIN 16 hrs.
Students are allowed the opportunity to put into practice the course material introduced in this and previous semesters. Opportunities for more responsibility and independence with previously learned procedures are provided. Students demonstrate competency of procedures learned in Radiography I. Also included is film critique in which the student evaluates radiographs.
Prerequisites: RAD-100, RAD-104, RAD-107, MAT-140
Corequisites: RAD-110, RAD-114
Additional Fees: Course fee applies.

RAD-120. Intermediate Clinical Practice. 3 Credits.
CLIN 32 hrs.
This 11-week clinical experience allows students the opportunity to put into practice and demonstrate competency of procedures learned in Principles of Radiography I and II. A weekly film critique class for students to evaluate radiographs also is included.
Prerequisites: RAD-110, RAD-114, RAD-117
Additional Fees: Course fee applies.

RAD-200. Pathology for Radiography. 2 Credits.
LECT 2 hrs.
This pathology course is an assessment of medical and surgical diseases designed to familiarize the student with changes caused by disease in relationship to radiography. Student projects, associated film presentations and critiques are also included.
Prerequisites: RAD-120
Corequisites: RAD-204, RAD-213.

RAD-204. Principles of Radiography III. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of Radiography III is a study of the anatomy and positioning of the skull and facial bones. Pediatric, geriatric, trauma and mobile radiography are also included.
Prerequisites: RAD-120
Corequisites: RAD-207, RAD-213
Additional Fees: Course fee applies.

RAD-207. Radiologic Special Imaging. 3 Credits.
LECT 3 hrs.
This course provides students with a basic understanding of the more advanced and complex diagnostic procedures. Students are introduced to such procedures as, but not limited to, myelography, arthrography, venography and hysterosalpingography. The basic concepts of pharmacology, venipuncture and contrast agents are included.
Prerequisites: RAD-120
Corequisites: RAD-204, RAD-213.

RAD-210. Radiographic Exposure. 3 Credits.
LECT 3 hrs.
This course will acquaint students with the many methods of routine and special technical factors available to radiographers to create diagnostic radiographs. Emphasizing the various accessory devices that may affect radiograph production, each student comes to understand how technique can significantly affect image quality. Students learn what technical factors can safely be used, aware that radiation physics, radiation protection and quality assurance are interlaced with the principles of radiographic exposure. In addition, upon completion of this course students are able to construct a functional safe technique chart.
Prerequisites: RAD-110, RAD-120
Corequisites: RAD-204, RAD-207.

RAD-213. Radiography Clinical Practice III. 2 Credits.
CLIN 16 hrs.
Students are allowed the opportunity to put into practice the course material introduced in this and previous semesters. The course also gives the student more responsibility and independence with procedures that have been deemed competent. Also included is film critique in which students evaluate radiographs.
Prerequisites: RAD-120, RAD-114, RAD-117
Corequisites: RAD-204, RAD-207, RAD-210
Additional Fees: Course fee applies.

RAD-220. Principles of Radiography IV. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Students become acquainted with the various components to a Radiologic Quality Assurance Program stressing the significant role a quality assurance program must play in the field of Radiography. Students also study the effect of various appropriate types of electromagnetic radiation and their effect upon living tissues and learn the importance of radiation protection for patients and personnel. A complete review of all radiography procedures also is provided.
Prerequisites: RAD-204, RAD-213, RAD-207, RAD-200, RAD-210
Corequisites: RAD-227
Additional Fees: Course fee applies.

RAD-224. Advanced Imaging. 2 Credits.
LECT 2 hrs.
The course presents the advanced imaging techniques required by nuclear medicine, diagnostic medical sonography, radiation therapy, mammography, computed tomography and magnetic resonance imaging. The basic concepts and principles of cardiac and vascular interventional radiography are also discussed.
Prerequisites: RAD-207, RAD-200, RAD-210, RAD-204, RAD-213
Corequisites: RAD-222, RAD-227.

RAD-227. Radiography Clinical Practice IV. 2 Credits.
CLIN 16 hrs.
This course provides students with an opportunity to refine skills learned in previous radiography clinical courses. Continuous practice is performed to improve technique and procedures. Students complete all remaining competencies for the program.
Prerequisites: RAD-204, RAD-213, RAD-207, RAD-200, RAD-210
Corequisites: RAD-220, RAD-224
Additional Fees: Course fee applies.

RAD-230. Advanced Clinical Practice. 3 Credits.
CLIN 32 hrs.
This 11-week course provides students the opportunity to exercise independent judgment and discretion in the technical performance of medical imaging procedures. Students complete the terminal competency evaluations for the program. This final session of clinical education ensures that the student is ready for employment.
Prerequisites: RAD-227, RAD-224, RAD-220
Additional Fees: Course fee applies.
Respiratory Therapy

Associate in Applied Science Degree

The general objective of the Respiratory Therapy program is to prepare graduates with the knowledge, skills, professional attitudes and behaviors necessary to attain state licensing and national credentialing for a career in respiratory therapy. Graduates become a vital part of the healthcare team in a variety of settings including hospitals, long-term care facilities, home health agencies, pulmonary rehabilitation centers and physician offices.

The program has two components: a pre-professional phase that includes all the general education and science prerequisites, and a professional phase that includes respiratory therapy specific course work and clinical education. Courses in the pre-professional phase of the program may be taken on a full-time or part-time basis during day or evening hours. Full-time day attendance is required for the professional phase of the program. Students seeking admission into the Respiratory Therapy program must have a GPA of 2.5 or better and a grade of C or better in all their pre-professional phase courses. Additionally, students must attend a program general orientation and complete an essay. Interested students should schedule an interview with the program director. An Allied Health Professional Phase Application Form must be filed in the office of Records and Registration by March 1 for admission into the professional phase in the Fall Semester.

A statewide criminal record search through the New Jersey State Police and a National Criminal History Database Search is performed on all students upon initial acceptance into the professional phase of the program and annually thereafter. If a record is found as a result of the criminal record searches, admission into the professional phase of the program is denied. If there is no record upon admission but subsequent searches result in a record found, the student will be immediately dismissed from the program.

When a graduate applies for licensure as a respiratory care practitioner in New Jersey, the New Jersey Board of Respiratory Care requires a Criminal History Background Check. If the Criminal History Background Check reveals a criminal conviction, a review of the application by the Board of Respiratory Care is required.

Students accepted into the program are responsible for obtaining malpractice insurance and must have health clearance through the college’s Health Services. Certification in Basic Life Support (BLS) for Healthcare Providers by the American Heart Association is also required.

The Respiratory Therapy program maintains a zero-tolerance policy regarding substance abuse. Respiratory Therapy students must be free of chemical impairment during participation in all parts of the Respiratory Therapy program including classroom, laboratory and clinical settings. A urine drug screening test is performed on all students upon initial acceptance into the professional phase of the program. If the test is positive for illegal substances, admission into the professional phase of the program is denied. In addition, illegal use of prescribed substances will result in denial of admission into the professional phase of the program.

For more information, visit the Respiratory Therapy (http://www.ccm.edu/academics/degrees/resotherapy.aspx) website.

Degrees

AAS Respiratory Therapy

(P3850)

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Professional Phase Credits 32

Total Credits 67

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

Science courses completed by students prior to entering a Respiratory Therapy course must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

The program is accredited through the Committee on Accreditation for Respiratory Care (COARC) www.CoARC.com (http://www.CoARC.com) . Graduates are eligible to apply for New Jersey State licensure and advanced credentialing as a Registered
Respiratory Therapy

Respiratory Therapist (National Board for Respiratory Care)

Faculty

John Rutkowski, RRT, FACHE, FAARC
Assistant Chairperson, Allied Health
Associate Professor, Respiratory Therapy Program
MPA, Seton Hall University
MBA, Fairleigh Dickinson University
B.A., Jersey City State College
A.S., St. Joseph Hospital and York College
CH 158 973-328-5423 jrutkowski@ccm.edu

Michele DaSilva, RRT-NPS
Assistant Professor, Respiratory Therapy
B.A., Fairleigh Dickinson University
A.S. Fairleigh Dickinson University
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Courses

RTH-199. Respiratory Therapeutics. 5 Credits.
LECT 4 hrs., LAB 3 hrs.
An introduction to respiratory care, including history of the profession, ethical and legal responsibilities of the respiratory therapist; medical terminology, basic respiratory care procedures including the physics, physiology and administration of medical gas therapy, basic patient communication and assessment skills. Basic respiratory care procedures, humidity and aerosol therapy, hyperinflation therapy, chest physiotherapy and bronchial hygiene; an overview of microbiology as applied to respiratory care; infection control; and equipment sterilization procedures. Course requires that students have completed the pre-professional phase of the Respiratory Therapy program and have permission of the program director to enroll.
Prerequisites: Permission of Program Director
Additional Fees: Course fee applies.

RTH-202. Cardiopulmonary Pharmacology. 2 Credits.
LECT 2 hrs.
An overview of general pharmacology, including routes of administration, federal regulations, dosages and calculations, and safety precautions; an in-depth study of drugs administered to the respiratory patient, including chemical structure, mechanism of action, indications, contraindications, physiologic effects and side-effects.
Prerequisites: BIO-101, BIO-102, CHM-117 and CHM-118 and permission of department chair.

RTH-203. Cardiopulmonary Physiology. 2 Credits.
LECT 2 hrs.
A study of physiologic mechanisms of the cardiopulmonary system, including a review of the anatomy of the pulmonary and circulatory systems; ventilatory mechanics, gas diffusion, physiology of internal and external respiration, oxygen transport, carbon dioxide elimination, acid-base balance, ventilation perfusion relationships; and the neurologic control of ventilation.
Prerequisites: BIO-101, BIO-102 and permission of program director.

RTH-204. Cardiopulmonary Evaluation. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Techniques of patient assessment and diagnostic evaluation of the cardiopulmonary system, including physical assessment, arterial blood gas analysis, pulmonary function testing, noninvasive monitoring of oxygenation and ventilation; an overview of laboratory tests, chest radiographs, electrocardiograph testing and interpretation and hemodynamic monitoring.
Prerequisites: RTH-199, RTH-202, RTH-203, RTH-210
Corequisites: RTH-205, RTH-206, RTH-211
Additional Fees: Course fee applies.

RTH-205. Cardiopulmonary Pathophysiology. 2 Credits.
LECT 2 hrs.
An overview of the pathophysiology of diseases of the cardiopulmonary system with an emphasis on pathophysiologic processes such as hypoxemia, hypoventilation, diffusion defects and ventilation perfusion mismatch; a survey of diseases encountered by the respiratory therapist, including pathophysiology, diagnostic methods and findings, clinical manifestations, treatment and prognosis.
Prerequisites: RTH-203 and permission of program director.

RTH-206. Mechanical Ventilation. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Techniques of airway management and the provision of mechanical ventilation; includes types of airways and appropriate uses; the physics and physiology of mechanical ventilation; classification of mechanical ventilators; indications for clinical application and complications of mechanical ventilation; management and monitoring of the patient requiring ventilatory support; and appropriate methods of withdrawing ventilatory support.
Prerequisites: RTH-199, RTH-202, RTH-203, RTH-210
Corequisites: RTH-204, RTH-205, RTH-211
Additional Fees: Course fee applies.

RTH-207. Neonatal and Pediatric Respiratory Care. 2 Credits.
LECT 2 hrs.
An overview of fetal development of the cardiopulmonary system with an emphasis on circulatory transitions and respiratory complications occurring at birth and in the neonatal period; a review of neonatal and pediatric respiratory disorders with an emphasis on clinical findings and treatment; a survey of respiratory care procedures as applied to the neonatal and pediatric patient, including oxygen therapy, humidity and aerosol therapy, diagnostic testing and mechanical ventilation.
Prerequisites: RTH-204, RTH-205, RTH-206, RTH-211
Corequisites: RTH-208, RTH-212.

RTH-208. Advanced Respiratory Care. 2 Credits.
LECT 2 hrs.
A survey of current events and state-of-the-art modalities in respiratory care; includes respiratory care in non-traditional settings, cardiopulmonary rehabilitation, controversies in clinical practice, and changes in health care affecting the respiratory care profession. Students are required to complete advanced cardiac life support (ACLS) certification through the American Heart Association.
Prerequisites: RTH-204, RTH-205, RTH-206, RTH-211
Corequisites: RTH-207, RTH-212.
RTH-210. Clinical Practice I. 3 Credits.
CLIN 16 hrs.
A supervised clinical application of the respiratory care procedures covered in Respiratory Therapeutics including chart review, patient and health professional communication, basic patient assessment, assembly and monitoring of oxygen therapy, aerosol and humidity therapy, aerosolized drug administration, hyperinflation therapy, bronchial hygiene and evaluation of patient response.
Prerequisites: Permission of department chair
Corequisites: RTH-199, RTH-202, RTH-203
Additional Fees: Course fee applies.

RTH-211. Clinical Practice II. 3 Credits.
CLIN 16 hrs.
Continued refinement of the skills covered in Clinical Practice I, in a general care environment, with an emphasis on clinical competence in providing basic respiratory care; followed by an introduction to the critical care environment and to respiratory care of the critically ill patient, with an emphasis on patient assessment and monitoring skills, and patient safety. Supervised application of the skills covered in Mechanical Ventilation and Cardiopulmonary Evaluation, including specialty rotations in ECG, the operating room, pulmonary function testing and blood gas laboratory, and physician offices.
Prerequisites: RTH-199, RTH-202, RTH-203, RTH-210
Corequisites: RTH-204, RTH-205, RTH-206
Additional Fees: Course fee applies.

RTH-212. Clinical Practice III. 4 Credits.
CLIN 32 hrs.
Continued refinement of the skills needed to function in a critical care environment with an emphasis on clinical competence in hemodynamic and advanced monitoring and management of the patient on mechanical ventilation. An emphasis is placed on interaction with other members of the healthcare team, patient care planning, clinical decision making and independent practice. Includes specialty rotations in neonatal and pediatric respiratory care, post open heart recovery and home care. The clinical fee includes the cost of the required National Board of Respiratory Care Self-Assessment Examination (NBRC SAE).
Prerequisites: RTH-204, RTH-205, RTH-206, RTH-211
Corequisites: RTH-207, RTH-208
Additional Fees: Course fee applies.

RTH-292. Special Topics in Respiratory Care. 2 Credits.
LECT 2 hrs.
An examination of selected topics or issues in Respiratory Therapy. Topics differ each time the course is offered. Students should consult the program director for further information.
Prerequisites: RTH-199 or permission of department chair
Corequisites: RTH-207, RTH-212.
Science and Mathematics

Associate in Science Degree

These curricula emphasize the physical and biological sciences and mathematics, as well as the liberal arts. They are designed for transfer to baccalaureate programs in mathematics and the sciences and are appropriate for students who plan careers in mathematics, biology, chemistry, physics, teaching, medicine, dentistry, allied health and other scientific programs. All programs include general education courses and advanced mathematics and science courses appropriate to the transfer major.

Options within the Science and Mathematics program include Biology, Chemistry and Mathematics. Students should consult with an academic advisor to select the curriculum which is appropriate for their transfer and career goals, as well as preparation for medical, dental and chiropractic schools. Transfer to science majors in four-year curricula which are more specialized, such as pharmacy and astronomy, can be accomplished with these programs with careful advisement.

County College of Morris (CCM) is a member of the New Jersey Sea Grant Consortium, a private, nonprofit organization comprised of member colleges, universities and private groups interested in marine affairs. Students may enroll in a variety of summer courses, including BIO-260 Introduction to Marine Biology and BIO-262 Introduction to Marine Sciences which deal with marine science. These may be used as electives in the following Science and Mathematics options and in the Environmental Science Option with the permission of your academic advisor. Courses are offered at the New Jersey Sea Grant Laboratory at Sandy Hook during the summer. Other courses include field trips or the use of equipment and facilities of the consortium.

Students may consult with the Biology and Chemistry chair for specific information and assignment to an academic advisor for options in Chemistry and Biology. Students interested in the Mathematics options may consult with the Mathematics chair.

Due to continual program revisions mandated by the accrediting agencies and/or changes in state-mandated requirements, students should consult with their academic advisors when selecting courses.

Pre-Medical, Pre-Dental, Pre-Veterinary Majors

Students preparing for medical, dental or veterinary medical schools should select the Chemistry major or the Biology major, pre-professional track. These schools require General Biology I and II, General Chemistry I and II, Organic Chemistry I and II, General Physics I and II, and mathematics, generally through Calculus I or further, to support these. Since there are prerequisites for these courses, it is important to see an academic advisor early in the process to plan the entire sequence of courses. Chiropractic, occupational therapy, physical therapy and physical assistant programs should major in Biology and confer with an academic advisor to select the correct track and selection of courses.

Students with a previous non-science degree who plan to take only the science courses necessary for these schools should also see an advisor since proper sequencing can save time in the completion of the courses. Additionally, by transferring general education courses from the previous degree, a student can complete an A.S. degree in Chemistry or Biology without taking any additional courses. For further information, contact the Department of Biology and Chemistry.

Pharmacy

Pharmacy programs are often separate schools within a university. The appropriate major to prepare for pharmacy is Chemistry with appropriately selected courses. Students should consult with an academic advisor to select the correct sequencing of courses.

Marine Biology

CCM is a member of the New Jersey Sea Grant Consortium, a private, nonprofit organization comprised of member colleges, universities and private groups interested in marine affairs. Students may enroll in a variety of summer courses, including BIO-260 Introduction to Marine Biology and BIO-262 Introduction to Marine Sciences which deal with marine science. These may be used as electives in the following Science and Mathematics Options, and in the Environmental Science Option with the permission of an academic advisor. Courses are offered at the New Jersey Sea Grant Laboratory at Sandy Hook during the summer. Other courses include field trips or the use of equipment and facilities of the consortium. Students may consult with the Biology and Chemistry chair for specific information and assignment to an academic advisor for options in Mathematics/Science, Chemistry and Biology. Students interested in the Mathematics Options may consult with the Mathematics chair.

Degrees

- AS Science and Mathematics - Biology Option (p. 188)
- AS Science and Mathematics - Biology Option, Track 1: Traditional (p. 189)
- AS Science and Mathematics - Biology Option, Track 2: Health Related (p. 189)
- AS Science and Mathematics - Biology Option, Track 3: Preprofessional/Scientific (p. 190)
- AS Science and Mathematics - Biology Option, Track 4: Environmental (p. 190)
- AS Science and Mathematics - Biology Option, Track 5: Nutrition (p. 191)
- AS Science and Mathematics - Chemistry Option (p. 191)
- AS Science and Mathematics - Mathematics Option (p. 192)

Biology

An Option within Science and Mathematics

(P2160)

Note: Biology majors requiring developmental courses in Mathematics must complete MAT-016 Intermediate Algebra prior to taking courses in Biology and Chemistry.

Biology is one of the most rapidly developing sciences today. A tremendous rate of expansion in the understanding of life processes, along with unprecedented growth in medical and environmental technologies, has resulted in a growing need for trained professionals in new, as well as traditional, fields. This
curriculum, with each of its five tracks, reflects this expanding science and its related technologies. It is a liberal arts program with emphasis on the sciences and mathematics. Students planning to transfer to baccalaureate programs or professional schools take courses that either parallel those required in the first two years of most baccalaureate programs in biology or those required for entry into the most popular professional programs.

Because of the complexity of career options and the diversity in requirements of baccalaureate and professional schools, it is recommended that students work closely with their academic advisors. Students who are preparing for medical, dental or veterinary medical schools should see an academic advisor in the Department of Biology immediately to plan their courses and sequencing of courses. The appropriate major is either Biology, pre-professional track, or Chemistry. Students who have a previous non-science degree should be able to complete either of these degrees by transferring general education courses and taking only the sciences required for the medical schools. College programs may differ widely in course offerings for various biology majors. In order to achieve maximum transfer of credits, it is absolutely essential that students speak to their academic advisors and consult the transfer institution regarding specific curriculum requirements.

Articulation Agreements
Students should check with the Transfer Office about articulation agreements with this program.

Students considering a career in teaching should read about the County College of Morris Teacher Education Specialization in Biology.

The following are tracks within the major for purposes of advisement. Dissection is required in certain mandated courses.

Traditional
Track 1 is the traditional curriculum which, because of its general scope, is anticipated to continue to satisfy the needs of the majority of students. Students in this program can continue in virtually any direction, although in certain circumstances they may have to make up credits upon transferring.

Traditional - Track 1
General Education Foundation

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Communication</td>
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<tr>
<td>ENG-111 English Composition I</td>
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<td>ENG-112 English Composition II</td>
<td>4</td>
</tr>
<tr>
<td>Math-Science-Technology</td>
<td>11</td>
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<tr>
<td>MAT-123 Precalculus</td>
<td>3</td>
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<tr>
<td>Biology Elective</td>
<td>4</td>
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<td>Math-Science-Technology Elective</td>
<td>6</td>
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<tr>
<td>Social Science or Humanities</td>
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<td>Choose from General Education course list</td>
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General Education Foundation Credits 32

Biology Traditional Core

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<tr>
<td>BIO-122 General Biology II</td>
<td>4</td>
</tr>
<tr>
<td>CHM-125 General Chemistry I - Lecture</td>
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<tr>
<td>CHM-126 General Chemistry I - Laboratory</td>
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<tr>
<td>CHM-127 General Chemistry II - Lecture</td>
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<td>CHM-128 General Chemistry II - Laboratory</td>
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<td>MAT-124 Statistics</td>
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<tr>
<td>or MAT-131 Analytic Geometry and Calculus I</td>
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</tr>
<tr>
<td>Free Electives</td>
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</table>

Biology Traditional Core Credits 32-33

Total Credits 64-65

Students should consult with their academic advisors when selecting free electives.

Science courses completed by students prior to entering the Biology option must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

Health Care
Track 2 is intended for those students who are preparing to transfer directly to professional schools including occupational therapy and physician’s assistant programs. However, this program is not suitable for students wishing to apply to programs in medicine, dentistry, optometry or podiatry, which require a more traditional selection of courses. This track has a more narrow selection of courses than Tracks 1 and 3, and, thus, may restrict transfer options. It is essential that applicants to this program be accepted only with the approval of their faculty advisors.

Health Care - Track 2
General Education Foundation

<table>
<thead>
<tr>
<th>Course</th>
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<td>Biology Elective</td>
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<td>Math-Science-Technology Elective</td>
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<tr>
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General Education Foundation Credits 32

Biology Health Care Core

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<tr>
<td>BIO-121 General Biology I</td>
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</tbody>
</table>

Total Credits 66-68
Students should consult with their academic advisors when selecting the Biology elective.

Science courses completed by students prior to entering the Biology option must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

**Preprofessional/Scientific**

Track 3 is intended to meet the needs of those whose math and science skills are above average and who hope to transfer to the more competitive baccalaureate programs, professional schools or medical, veterinary or dental schools. Students wishing to be admitted into this track can do so only with the approval of their faculty advisors.

**Preprofessional/Scientific - Track 3**

**General Education Foundation**

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<th>Course</th>
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<td>General Education Foundation Credits</td>
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**Biology Pre-Professional Core**

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<td>General Chemistry I - Lecture</td>
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<td>CHM-126</td>
<td>General Chemistry I - Laboratory</td>
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<td>General Chemistry II - Lecture</td>
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<td>Organic Chemistry I - Lecture</td>
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<td>Biology Pre-Professional Core Credits</td>
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</table>

**Total Credits** 64

Students should consult with their academic advisors when selecting free electives.

Science courses completed by students prior to entering the Biology option must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

**Environmental**

Track 4 is designed to meet the needs of those who clearly are interested in a career in the environmental field. These programs are becoming increasingly more specialized in the array of courses required in the first two years. For this reason, students wishing to be admitted into this track will require the approval of their faculty advisors.

**Environmental - Track 4**

**General Education Foundation**

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<td>MAT-123</td>
<td>Precalculus</td>
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<td>Social Science or Humanities</td>
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<td>PSY-113</td>
<td>General Psychology</td>
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**Environmental Science Core**

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<td>General Biology II</td>
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<tr>
<td>BIO-202</td>
<td>Ecology</td>
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<td>CHM-125</td>
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<td>General Chemistry I - Laboratory</td>
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<td>CHM-127</td>
<td>General Chemistry II - Lecture</td>
</tr>
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<td>CHM-128</td>
<td>General Chemistry II - Laboratory</td>
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<tr>
<td>MAT-124</td>
<td>Statistics</td>
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<td>Free Electives</td>
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</table>

**Total Credits** 64
Environmental Science Core Credits 32
Total Credits 64

Students should consult with their academic advisors when selecting free electives.

Science courses completed by students prior to entering the Biology option must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

Nutrition
Track 5 is designed to meet the needs of students who are interested in a career in nutrition (e.g., health and wellness, fitness or sports related nutrition). The track is intended for those students who are preparing to transfer directly to a four-year school with programs that offer a Registered Dietitian (RD) credential or Dietetic Technicians, Registered (DTR) certification. The courses required for the first two years are very specific. Therefore, students wishing to be admitted into this track must meet with and get the approval of their academic faculty advisor.

Nutrition - Track 5
General Education Foundation

Communication 6
ENG-111 English Composition I
ENG-112 English Composition II
Math-Science-Technology 11
MAT-124 Statistics
BIO-133 Human Biology
CHM-117 Introduction to Chemistry
CHM-118 Introductory Chemistry Laboratory
Social Science 3
ECO-211 Principles of Economics I
Humanities 3
Choose from General Education course list
Social Science or Humanities 3
Choose from General Education course list
General Education Electives 6
PSY-113 General Psychology
Humanities, Social Science, Communication or Language

General Education Foundation Credits 32

Biology Nutrition Core

BIO-121 General Biology I 4
BIO-122 General Biology II 4
BIO-215 Microbiology 4
HOS-100 Serv-Safe Food Handling 1
HOS-105 Food Science and Nutrition 3
CHM-210 Essentials of Organic Chemistry 4
Free Electives 12
Biology Nutrition Core Credits 32
Total Credits 64

Chemistry
An Option within Science and Mathematics (P2152)

Note: Chemistry majors requiring developmental courses in Mathematics must complete MAT-016 Intermediate Algebra prior to taking courses in Biology and Chemistry.

Chemistry is a versatile subject area and the pursuit of a career in chemistry can be a most intellectually satisfying experience. No other basic science touches and shapes as many aspects of modern society as chemistry. From soft contact lenses and synthetic blood to alternative fuel sources and advances in medicine and biotechnology, the study of chemistry has provided the solution to complex problems and has improved the quality of all phases of human life.

The fact that chemists at all levels of education find a market for their skills and knowledge in every employment area is further demonstration of the scope of the science of chemistry. Chemists provide the backbone for manufacturing industries, such as pharmaceuticals, laboratories, environmental protection and for government positions in regulatory agencies.

Chemistry and biochemistry are the strongest preparation for professional schools in the health-related disciplines, such as medicine, dentistry and pharmacy, as well as the fields of environmental science, polymers and geology.

The Chemistry program at County College of Morris is designed to provide students with a strong foundation in all areas of modern chemistry. The core courses required for the A.S. degree prepare the student to transfer and attain a B.S. or B.A. degree, to attend health-related professional schools in medicine, dentistry, pharmacy, physical therapy and chiropractic, or to start a career in chemistry. The degree is also applicable for those students interested in the applications of chemistry to environmental problems. Students who are preparing for medical, dental or veterinary schools should see an academic advisor in the Department of Biology and Chemistry early in the process to plan their courses and sequencing of courses. Students who have a previous non-science degree should be able to complete this program by transferring general education courses and taking only the sciences required for medical schools.

The department is staffed with a dedicated teaching faculty, and many have industrial or medical experience. State-of-the-art equipment is used in all laboratory courses to maximize the students’ practical hands-on experience.

Students should consult with their advisors to ensure the proper sequencing of required and elective courses. Correct advisement is absolutely necessary to assure transferability.

The study of chemistry opens doors to satisfying careers and to a professional life in which the tendency to ask “why” can lead to rewarding endeavors.
Articulation Agreements
Students should check with the Transfer Office about articulation agreements with this program.

Students considering a career in teaching should read about the County College of Morris Teacher Education Specialization in Chemistry.

General Education Foundation

Communication 6
ENG-111 English Composition I
ENG-112 English Composition II

Math-Science-Technology 11
MAT-123 Precalculus

Biology or Physics Elective
Math/Science/Technology Elective

Social Science 3
Choose from General Education course list

Humanities 3
Choose from General Education course list

Social Science or Humanities 3
Choose from General Education course list

General Education Electives 6
Choose from General Education course list

General Education Foundation Credits 32

Chemistry Core

CHM-125 General Chemistry I - Lecture 3
CHM-126 General Chemistry I - Laboratory 1
CHM-127 General Chemistry II - Lecture 3
CHM-128 General Chemistry II - Laboratory 1
CHM-231 Organic Chemistry I - Lecture 3
CHM-232 Organic Chemistry I - Laboratory 1
CHM-233 Organic Chemistry II - Lecture 3
CHM-234 Organic Chemistry II - Laboratory 1

Biology or Physics Elective 4
MAT-131 Analytic Geometry and Calculus I 4

Restricted Elective 4
Free Elective 4

Chemistry Core Credits 32

Total Credits 64

Science courses completed by students prior to entering the Chemistry option must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake the courses.

Mathematics

An Option within Science and Mathematics
(P2150)
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**Courses**

**BIO-100. Elements in Biology. 3 Credits.**  
LECT 3 hrs.  
A foundation providing necessary skills and concepts needed to pursue the biology major. The course stresses skill development in areas such as communication, classification, inquiry, mathematical measurement, data analysis and report writing. Skills then are applied to the study of the cell cycle and diverse life processes.  
**Additional Fees:** Course fee applies.

**BIO-101. Anatomy and Physiology I. 4 Credits.**  
LECT 3 hrs., LAB 3 hrs.  
The structure and function of the human organism is studied. Special emphasis is given to interrelationships of organs and organ systems. Cellular morphology and function are included for an appreciation of the adult form. The student is introduced to basic chemistry, the cell, basic tissues, the skeletal, muscular and nervous systems. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.  
**Prerequisites:** Placement basis or ENG-007 or ENG-025 or ENG-022 and MAT-016  
**Additional Fees:** Course fee applies.

**BIO-102. Anatomy and Physiology II. 4 Credits.**  
LECT 3 hrs., LAB 3 hrs.  
A continuation of Anatomy and Physiology I. The circulatory, respiratory, digestive, urinary, endocrine and reproductive systems are studied. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.  
**Prerequisites:** BIO-101 (Minimum grade of C)  
**Additional Fees:** Course fee applies.

**BIO-115. Human Sexuality. 3 Credits.**  
LECT 3 hrs.  
Provides an introductory knowledge of the basic topics in human sexuality. Topics presented are the basic structure and function of the male and female reproductive systems, sexual response and behavior, pregnancy, birth control, sexual disease, atypical behavior, sex and the law, and sexuality through the life cycle. Films, slides, panel discussions and guest lectures are employed to enhance the educational process. The course is open to all students at the college as a free elective and does not fulfill any science requirement.

**BIO-116. Animal Control Officer's Training Course. 3 Credits.**  
LECT 3 hrs.  
Preparation for New Jersey State Certification as an Animal Control Officer. Topics include legal authority for animal control (federal, state, local); courtroom procedures; animal behavior, capture and handling; disease recognition, prevention and control; shelter operations; and community relations.
BIO-118. Biomedical Ethics. 3 Credits.
LECT 3 hrs.
This course introduces students to major ethical issues in areas of biomedicine in contemporary society. The focal point of the course is a process for ethical reasoning and ethical decision making. Students identify ethical problems, assess information relevant to decisions, identify stakeholders affected by decisions, recognize competing values, consider options, make decisions and realize the consequences of decisions. The process is applied to issues in such fields as genetics, death and dying, reproduction, public policy and medical decision making. This course does not fulfill a laboratory science requirement.

BIO-121. General Biology I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include the fundamentals of chemistry, cell structure and function, and the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-122. General Biology II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A continuation of General Biology I. Topics include homeostasis, animal reproduction, embryonic development, genetics, ecology and evolution. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: BIO-121 or BIO-180 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-123. Cell Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall semester only. An introduction to the fundamentals of cellular biology. Topics covered are the nature of biologically important molecules, molecular synthesis, energetics, cellular structure and function, cell reproduction, heredity, and basic laboratory techniques for cellular study. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-127. Biology of Environmental Concerns. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A survey of ecological issues from a variety of perspectives. The course provides an awareness of environmental problems, a knowledge of cause-and-effect relationships of diverse activities on this planet and a basis for making informed judgments about the potential solutions to environmental problems. Major topics include the roots of our environmental problems, introductory concepts in ecology, human population dynamics and control, food resources and world hunger, renewable and nonrenewable energy resources, mineral resources and solid waste, wild plant and animal resources, water resources, air pollution, water pollution, pesticides and pest control, economics, politics and the environment, world views, and ethics and the environment. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025
Additional Fees: Course fee applies.

BIO-132. Concepts in Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A basic introduction to the study of biological science designed for the non-science major. Topics include the hierarchy of organization, life processes, cell theory, human genetics, theories of evolution, biochemistry and some principles of ecology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022
Additional Fees: Course fee applies.

BIO-133. Human Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. An introduction to the body systems and the factors which affect human physiology. Lectures include the basic anatomy and physiology of the major systems plus discussion topics emphasizing nutrition, exercise, sexuality, genetic engineering and recent advances in biotechnology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022
Additional Fees: Course fee applies.

BIO-180. General Biology I - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include fundamentals of chemistry, cell structure and function, the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
Prerequisites: Permission of department chair or honors advisor
Additional Fees: Course fee applies.
BIO-181. General Biology II - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. A continuation of BIO-180 General Biology I Honors. Topics include homeostasis, animal reproduction and embryonic development, genetics, ecology, and evolution. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills. **Prerequisites:** BIO-180 or BIO-121 and permission of honors advisor **Additional Fees:** Course fee applies.

BIO-201. Genetics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. Provides the student with a broad knowledge of genetics from the molecular to the organismal level. Topics covered include the molecular and Mendelian concepts of heredity and their relationship to cell function, development, population changes and evolution, and biotechnology. Laboratory exercises emphasize a variety of techniques and skills used in genetic research and testing. **Prerequisites:** BIO-121 and BIO-122 or BIO-180 and BIO-181 (Minimum grade of C)
**Additional Fees:** Course fee applies.

BIO-202. Ecology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. This course introduces the basic fundamentals of ecology, the study of the interrelationships between organisms and their environment. Topics include an introduction to ecosystem structure and function, abiotic factors in ecosystems, energy flow and mineral cycling, population and evolutionary ecology, community ecology, a comprehensive survey of aquatic and terrestrial ecosystems, and human ecology. Laboratories and field trips are designed to introduce students to techniques used in basic ecological research. **Prerequisites:** BIO-121 or BIO-180 or LHT-110 (minimum grade of C)
**Additional Fees:** Course fee applies.

BIO-215. Microbiology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of microorganisms, including viruses, bacteria, fungi, protozoa and algae. Topics covered include microbial anatomy, physiology, genetics, ecology and methods of control. Research methods and modern immunological concepts also are discussed. Laboratory exercises in basic microbiological techniques and the study of living microorganisms are designed to supplement the theory presented. **Prerequisites:** Placement basis or ENG-025 or ENG-007 or ENG-022 and BIO-101 or BIO-121 or BIO-123 or BIO-180 (minimum grade of C) and CHM-117 or CHM-125 and CHM-126 (Minimum grade of C)
**Additional Fees:** Course fee applies.

BIO-223. Cell and Molecular Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of biological molecules and their functions. Emphasis will be placed on the mechanism and regulation of macromolecule synthesis. Laboratory exercises will focus on instrumentation and techniques used in biological research. **Prerequisites:** BIO-121 or BIO-123 and CHM-125 and CHM-126
**Additional Fees:** Course fee applies.

BIO-226. Cooperative Industrial Experience - Biology. 3 Credits.
COOP 3 hrs.
On-site work hours 300. An opportunity for selected students enrolled in the Biotechnology program to obtain job-oriented laboratory training in an industrial environment prior to career employment. Students desiring to participate in this experience should make their interest known to the department chair or the Office of Career Services and Cooperative Education by the end of their second semester. **Prerequisites:** Permission of department chair.

BIO-233. Independent Study in Biology. 3 Credits.
LECT 3 hrs.
An opportunity for selected students to participate in biological research under close supervision of the biology faculty. Interested students should make their interest known early in the prior semester to the department chair, who will familiarize the students with criteria for selection and the steps to be taken to gain entrance to this course. This course does not fulfill any of the science requirements in biology but is offered as a free elective. **Prerequisites:** Permission of department chair
**Additional Fees:** Course fee applies.

BIO-260. Introduction to Marine Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer semester only. A field- and laboratory-oriented undergraduate course covering the biology and characteristics of marine animals and plants. The course is designed to provide experience in collecting and identifying examples of local marine organisms. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey. **Prerequisites:** BIO-121 and permission of department chair
**Additional Fees:** Course fee applies.

BIO-262. Introduction to Marine Sciences. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer Semester only. A field-oriented, lower-division undergraduate course covering the principal disciplines in the marine sciences. The course is designed to help the student evaluate his or her interest in the marine science world. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey **Prerequisites:** BIO-121 and permission of department chair
**Additional Fees:** Course fee applies.

BIO-270. Immunology. 3 Credits.
LECT 3 hrs.
An introductory-level course that covers the basic immunologic concepts of cells and humoral products of the immune system, the genetic control of immunity and generation of diversity, and antigen-antibody reactions. These basic concepts are correlated to clinical applications as they relate to laboratory testing manifestations of disease, such as autoimmunity, hypersensitivity, transplantation, tumor immunology, and immunodeficiency. **Prerequisites:** BIO-215 (Minimum grade C).

BIO-274. Pathophysiology. 3 Credits.
LECT 3 hrs.
Pathophysiology is a course which studies the physiological alterations associated with common disease processes which affect human beings across the lifespan. Common diseases of the major organ systems are covered as well as such general issues as infection, neoplasm, inflammation, fluid and electrolyte imbalance, trauma, and shock. **Prerequisites:** BIO-101 and BIO-102 and CHM-117.
BIO-295. Special Topics in Biology. 4 Credits.
LECT 4 hrs.
An examination of selected topics or issues in biology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A introductory course in Biology
Additional Fees: Course fee applies.

CHM-100. Elements of Chemistry. 3 Credits.
LECT 3 hrs.
A one-semester, introductory 3-credit, non-laboratory course designed for students with little or no background in chemistry. Emphasis is on preparing students for General Chemistry and Introductory Chemistry courses. The course encompasses chemical principles and calculations with a brief review of algebra.
Prerequisites: MAT-016.

CHM-105. Forensic Science. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. An introduction to the applications of the physical and biological sciences in analyzing and evaluating physical evidence as related to crime and the law.
Additional Fees: Course fee applies.

CHM-117. Introductory Chemistry Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
An introduction to the basic concepts of inorganic, organic and biochemistry. The emphasis is on the relationship of these concepts to physiological chemistry and living systems. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 (minimum grade of C) and ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-118.

CHM-118. Introductory Chemistry Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-117.
Prerequisites: Placement basis or MAT-016 and ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-117
Additional Fees: Course fee applies.

CHM-125. General Chemistry I - Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
A study of the fundamental principles of chemistry and their application to chemical reactions. Topics include the structure of the atom, concepts of matter, mass relationships for pure substances and chemical reactions, solutions, electronic structure, the chemical bond, nuclear reactions and gases. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-126.

CHM-126. General Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-125. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-125
Additional Fees: Course fee applies.

CHM-127. General Chemistry II - Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
a continuation of General Chemistry I with emphasis on chemical equilibrium and energy changes in chemical reactions. Also included are acids, bases, buffers, chemical thermodynamics, kinetics, qualitative analysis and electrochemistry. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 (minimum grade of C), CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-128.

CHM-128. General Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-127. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 and CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-127
Additional Fees: Course fee applies.

CHM-136. Environmental Regulation. 3 Credits.
LECT 3 hrs.
This course is an overview of critical environmental issues encountered by industry from a regulatory perspective. Various federal and New Jersey state regulations pertaining to air, water, hazardous waste and hazardous materials management are investigated. Students acquire knowledge on how industry complies with the diversity of regulatory requirements. Students are exposed to examples of instances where industrial non-compliance with applicable regulations has led to deleterious environmental and occupational health effects. Current issues and their significance to environmental and occupational health are discussed including, Clean Water Act, Clean Air Act, Environmental Cleanup and Responsibility Act (ECRA), Resource Conservation and Recovery Act (RCRA), Occupational Safety and Health Act (OSHA), Toxic Substance Control Act (TSCA), Asbestos, indoor air quality and underground storage tanks.
Prerequisites: BIO-123 and CHM-125.

CHM-204. Principles of Occupational Health and Safety. 3 Credits.
LECT 3 hrs.
A survey course providing an overview of industrial hygiene and the roles that the industrial hygiene professional plays in recognizing, evaluating and controlling hazards in the workplace. This course provides an introduction to the qualitative and quantitative issues essential to comprehend occupational safety and health principles. Case studies and hands-on exercises are utilized to stress key concepts.
CHM-210. Essentials of Organic Chemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer Semester only. This course is the study of the basic principles of structure, reactivity and nomenclature in organic chemistry. The laboratory develops basic work skills in the types of experiments performed in a typical organic chemistry laboratory with emphasis on the safe handling of laboratory chemicals and the proper presentation of experimental results.
Prerequisites: CHM-117, CHM-118 or CHM-127, CHM-128 (minimum grade of C for all prerequisites)
Additional Fees: Course fee applies.

CHM-212. Biochemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. An introduction to physiological chemistry. Lectures cover amino acids, proteins, lipids, nucleic acids, carbohydrates, molecular genetics, energetics and metabolic pathways. Lab reinforces concepts covered in lecture. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-117 or CHM-125
Additional Fees: Course fee applies.

CHM-219. Quantitative Chemical Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Fall Semester only. Principles of modern quantitative methods in chemistry, including the study of chemical equilibria, solubility, acidity and complex formation. The laboratory work involves practical applications of inorganic and organic analysis including volumetric, gravimetric, chromatographic and instrumental techniques. Emphasis is placed on the statistical treatment of data and report writing. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-117 or CHM-127 (minimum grade of C) or equivalent
Additional Fees: Course fee applies.

CHM-220. Instrumental Methods of Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Spring Semester only. This survey course covers theory and applications of modern instrumentation utilized to solve problems in chemical analysis. The laboratory work involves hands-on experience utilizing instruments such as gas(GC), liquid(HPLC) and ion chromatography; spectrophotometric methods including visible, ultraviolet, infrared(FTIR) and atomic absorption; ICP and other methods, including ion selective electrode methods; and electrophoretic methods including capillary electrophoresis(HPCE). Emphasis is placed on the comparison of methods, the collection and interpretation of laboratory data, technical report writing and record keeping. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127 or equivalent (minimum grade of C)
Additional Fees: Course fee applies.

CHM-228. Cooperative Industrial Experience - Chemical Technology. 3 Credits.
COOP 3 hrs.
This course provides selected students enrolled in the Technology programs with job-oriented laboratory training and practical work experience in an industrial environment prior to career employment. The course may be taken as a three-credit technical elective. Students desiring to participate in this experience should make their interests known to the department chair by the end of their second semester. Fourth semester status in Chemical Technology, Environmental Science Option or Biotechnology programs required.
Prerequisites: Permission of department chair.

CHM-231. Organic Chemistry I - Lecture. 3 Credits.
LECT 3 hrs.
This course is an introduction to the chemistry of carbon compounds. Topics include the study of the fundamental concepts of structure and stereochemistry, physical properties of organic compounds and a functional approach to the interpretation of organic reactions. This course is designed for majors in Biology, Chemistry, Pharmacy, and for students preparing for medical, dental and veterinary schools. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-117, CHM-128 (minimum grade C)
Corequisites: CHM-232.

CHM-232. Organic Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments stress techniques involved in the synthesis and purification of typical organic compounds using both macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Corequisites: CHM-231
Additional Fees: Course fee applies.

CHM-233. Organic Chemistry II - Lecture. 3 Credits.
LECT 3 hrs.
A continuation of the study of organic compounds with further study of functional groups, reaction mechanisms including nucleophilic substitution and elimination reactions, and infrared and nuclear magnetic resonance spectroscopy. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 (Minimum Grade of C)
Corequisites: CHM-234.

CHM-234. Organic Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments involve the multi-step synthesis of organic compounds, which illustrate the principles of CHM-233, using macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 and CHM-232
Corequisites: CHM-233
Additional Fees: Course fee applies.
CHM-235. Independent Study in Chemistry. 3 Credits.
LECT 3 hrs.
This course is an opportunity for selected students to participate in independent research under close supervision of a Chemistry faculty member. Interested students should make their interests known early in the prior semester to the department chair who will detail the criteria for selection.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CHM-295. Special Topics in Chemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An examination of selected topics or issues in chemistry. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Chemistry and permission of department chair
Additional Fees: Course fee applies.

CHM-296. Special Topics in Chemistry. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in chemistry. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Chemistry and permission of department chair

MAT-007. Foundations of Algebra. 2 Credits.
LECT 2 hrs.
This course integrates selected topics of arithmetic and introductory algebra, including operations on whole numbers, fractions, decimals, percent and signed numbers, linear equations and inequalities in one variable, operations on polynomials, factoring, integer exponents, and graphing. Students are required to compute a series of laboratory assignments, which are designed to reinforce concepts based on the placement test results.

MAT-009. Basic Mathematics Ia. 1 Credit.
LECT 1 hr.
Three (3) hours per day for one week. This is an intensive one-week review of topics typically found on the computation placement test. A passing grade satisfies the Basic Mathematics requirement.
Prerequisites: Appropriate score on a placement test.

MAT-010. Basic Algebra 1A. 1 Credit.
LECT 1 hr.
Three (3) hours per day for one week. This is an intensive one-week review of topics typically found on the basic algebra placement test. A passing grade satisfies the Basic Algebra requirement.
Prerequisites: Appropriate score on a placement test.

MAT-011. Basic Mathematics I. 3 Credits.
LECT 3 hrs.
A preparatory course designed for students who need additional practice and review in arithmetic.

MAT-014. Basic Algebra I. 3 Credits.
LECT 3 hrs.
A preparatory course in elementary algebra which includes rational numbers, polynomials, algebraic operations, first-degree equations, graphing, systems of linear equations, problem solving and an introduction to the quadratic equations.
Prerequisites: MAT-009 or MAT-011 and permission of department chair.

MAT-016. Intermediate Algebra. 3 Credits.
LECT 3 hrs.
A second-level preparatory algebra course designed to prepare students for credit-level mathematics courses. Covered are selected topics, including systems of linear equations, polynomials, factoring, rational expressions, radicals and solving quadratic equations.
Prerequisites: MAT-007 or equivalent.

MAT-050. Fundamentals of Mathematics. 5 Credits.
LECT 5 hrs.
This course integrates selected topics of arithmetic and introductory algebra, including computation, topics in geometry, operations on signed numbers, solving linear equations in one variable, operations on polynomials, factoring, integer exponents and graphing.
Prerequisites: Appropriate score on a placement test.

MAT-060. Fundamentals of Algebra. 6 Credits.
LECT 6 hrs.
An intensive one-semester course to prepare students for credit mathematics courses. Topics include computation, polynomials, exponents, linear equations, factoring, rational expressions, radicals and solving quadratic equations.
Prerequisites: Appropriate score on a placement test or permission of department chair.

MAT-110. College Algebra. 3 Credits.
LECT 3 hrs.
An intensive course designed to prepare students for mathematics courses such as Calculus with Applications to Business and Economics and Precalculus. It covers selected algebra topics including exponents; rational expressions; polynomials, radicals, relations and functions; exponential and logarithmic functions; systems of equations.
Prerequisites: MAT-016 or MAT-060 (grade C or better) or equivalent.

MAT-113. Applied Calculus. 4 Credits.
LECT 4 hrs.
A study of topics which provides a basis for continuing courses in mathematics and the physical sciences. This course includes trigonometric, exponential and logarithmic functions; analytic geometry; differentiation and integration.
Prerequisites: MAT-110 or MAT-123 or equivalent.

MAT-117. Mathematical Analysis for Business and Economics. 3 Credits.
LECT 3 hrs.
Mathematical topics used in business and economics with emphasis on applications. Covered are polynomials, linear and quadratic models, systems of equations, matrix algebra, and linear programming including the Simplex Method.
Prerequisites: MAT-016, MAT-060 (grade of C or better) or equivalent.

MAT-118. Calculus With Application to Business AND Economics. 3 Credits.
LECT 3 hrs.
A course covering functions, derivatives and integration, with special consideration of applications to the business and economics areas. Partial differentiation is introduced.
Prerequisites: MAT-110 (grade of C or better) or equivalent.
MAT-120. Mathematics for the Liberal Arts. 4 Credits.
LECT 4 hrs.
A course addressed to liberal arts students. Topics include the history of mathematics, probability, statistics, geometry, number theory, algebra, graphs and functions, and a choice of selected topics.
Prerequisites: MAT-007, MAT-014, MAT-050 or equivalent.
MAT-123. Precalculus. 4 Credits.
LECT 4 hrs.
An intensive one-semester course to prepare students for Analytic Geometry and Calculus, including absolute values; relations; functions; equations; inequalities; polynomial, rational, trigonometric, inverse trigonometric, exponential and logarithmic functions; trigonometric equations and identities; and graphs.
Prerequisites: MAT-110 (grade of C or better) or equivalent.
MAT-124. Statistics. 3 Credits.
LECT 3 hrs.
The fundamental principles of statistical methods. Descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, elementary hypothesis testing, confidence intervals and ethical issues in statistics are included.
Prerequisites: MAT-016, MAT-060, MAT-120 or equivalent.
MAT-130. Probability and Statistics. 4 Credits.
LECT 4 hrs.
The fundamental principles of statistical methods. Descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, hypothesis testing and confidence intervals and ethical issues in statistics are included. An introduction to the use of statistical software to analyze data will be emphasized.
Prerequisites: MAT-016, MAT-060 or equivalent.
MAT-131. Analytic Geometry and Calculus I. 4 Credits.
LECT 4 hrs.
The first semester of a three-semester sequence. Analytic geometry in the plane, differentiation and applications, and integration are covered.
Prerequisites: MAT-123 (grade of C or better) or equivalent.
MAT-132. Analytic Geometry and Calculus II. 4 Credits.
LECT 4 hrs.
A continuation of Analytic Geometry and Calculus I, which covers the calculus of inverse trigonometric functions, methods of integration, analytic geometry in the plane including polar coordinates and conic sections, hyperbolic functions, sequences and series, and parametric equations.
Prerequisites: MAT-131 (grade of C or better) or equivalent.
MAT-140. Math for Radiographers. 1 Credit.
LECT 1 hr.
This course discusses the math skills that are crucial in the healthcare environment. It teaches the basis measurements, calculations, percents, ratios, and proportions, scientific notation, metric conversions, basis algebraic principles and basic geometric principles used in Radiology. It reviews whole numbers, fractions, decimals and exponents. Radiology units and numeric prefixes are also discussed.
Prerequisites: MAT-016 or MAT-060 and admission to the Radiography program
Corequisites: RAD-100, RAD-104, RAD-107.
MAT-183. Honors Probability and Statistics. 4 Credits.
LECT 4 hrs.
An introduction to the principles of statistical methods. The course will integrate spreadsheet software to cover such topics as descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, elementary hypothesis testing and confidence intervals. The course will also cover ethical issues in statistics. Comprehensive case studies will be covered throughout the semester. An introduction to the use of statistical software to analyze large data sets will be emphasized.
Prerequisites: Permission of department chair or honors advisor.
MAT-210. Probability and Statistics II. 4 Credits.
LECT 4 hrs.
This course is a continuation of statistical analysis from Probability and Statistics. Techniques for collection and analysis of data emphasizing estimation and hypothesis testing, analysis of variance and regression analysis are included. Also included are nonparametric testing and an introduction to multiple regression. A focus on analyzing large data sets using statistical software.
Prerequisites: MAT-124 or MAT-130 or MAT-183 or equivalent (grade of C or better).
MAT-225. Discrete Mathematics. 4 Credits.
LECT 4 hrs.
This course is for mathematics and computer science majors. An introduction to discrete mathematics. Topics include logic, Boolean algebra, mathematical proofs, sets, functions, sequences, graphs, number theory, recursion, mathematical induction, introductory combinatorics, and discrete probability. Emphasis on applications to foundations of computer science.
Prerequisites: MAT-131.
MAT-228. Linear Algebra. 3 Credits.
LECT 3 hrs.
Selected topics including matrices and determinants, vectors and vector spaces, linear transformations, eigenvalues and eigenvectors, with applications from a variety of disciplines.
Prerequisites: MAT-132 (grade of C or better).
MAT-230. Calculus III. 4 Credits.
LECT 4 hrs.
A continuation of Analytic Geometry and Calculus II which includes analytic geometry in three dimensions, functions of several variables, partial derivatives, multiple integrals, vectors and an introduction to vector analysis.
Prerequisites: MAT-132 (grade of C or better).
MAT-270. Numbers and Operations for Middle Grades. 3 Credits.
LECT 3 hrs.
This course prepares middle-grades mathematics teachers with a concrete understanding of numbers, number systems, operations with fractions, decimals and percent; there is special consideration to ratios, proportions, factors and multiples and including instructional techniques and calculator-structured lessons.
Prerequisites: Permission of department chair.
MAT-271. Algebra for Middle Grades. 3 Credits.
LECT 3 hrs.
This course explores topics from pre-algebra and algebra. The course prepares middle-grades mathematics teachers with a concrete understanding of patterns, relationships and functions, polynomials, algebraic operations, first degree equations, graphing and systems of linear equations and linear inequalities and including instructional techniques and calculator-structured lessons.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.

MAT-272. Mathematics for Middle Grades. 3 Credits.
LECT 3 hrs.
This course explores topics including history of mathematics, algebra, probability and statistics while infusing instructional techniques and uses of technology.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.

MAT-273. Statistics for Middle Grades. 3 Credits.
LECT 3 hrs.
An introduction to statistical methods and reasoning as applied to practical problems. Topics include collecting and summarizing data, histograms and other types of graphs, descriptive statistics, normal distributions, sampling, surveys, use of computers in statistics and interpretation of data.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.

MAT-274. Geometry for Middle Grades. 3 Credits.
LECT 3 hrs.
This course includes topics in geometry and measurements with use of Geometer Sketchpad Software. Formulas for perimeter, area, and volume for polygons and polyhedrons, properties of parallel lines and perpendicular lines, fundamental topics of measurements, measurement instruments, measurement errors are covered while infusing instructional techniques.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.
Teacher Education

County College of Morris (CCM) offers 10 Teacher Education specializations designed to meet the requirements of the first two years of a baccalaureate-level teacher education program in elementary or secondary education (K-12). The teacher education programs at the four-year colleges and universities require that students pursue a major in an academic discipline in addition to professional education courses that are required for teacher certification. Students planning to pursue a teaching degree at a four-year college or university should enroll in one of the following CCM programs that will provide the foundation teacher education courses, as well as courses in the student’s intended major at the four-year college: Biology, Chemistry, English, History, Mathematics, Physical Education, Psychology, Sociology, Spanish, Visual Arts.

Students in the Teacher Education Specializations are advised by the Teacher Education advisor or by faculty advisors in each of the 10 areas of specialization. Students are required to maintain a 3.0 GPA or better in order to remain in the Teacher Education Program at CCM.

CCM’s Teacher Education program follows the curricular model of teacher education typical at many four-year colleges. However, both general and professional education requirements often differ from college to college. Therefore, students are strongly encouraged to review the education program requirements with the four-year college BEFORE selecting courses at CCM.

Students may visit CCM’s Transfer Office for assistance.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

For more information, visit the Teacher Education (http://www.ccm.edu/academics/degrees/teachered.aspx) website.

Degrees

- AS Teacher Education - Biology Education Specialization (p. 202)
- AS Teacher Education - Chemistry Education Specialization (p. 203)
- AA Teacher Education - English Education Specialization (p. 203)
- AS Teacher Education - Exercise Science Health/Physical Education Specialization (p. 204)
- AS Teacher Education - Mathematics Education Specialization (p. 204)
- AA Teacher Education - Social Studies (History) Education Specialization (p. 205)
- AA Teacher Education - Social Studies (Psychology) Education Specialization (p. 205)
- AA Teacher Education - Social Studies (Sociology) Education Specialization (p. 205)
- AA Teacher Education - Spanish Education Specialization (p. 206)
- AFA Teacher Education - Visual Arts Education Specialization (p. 206)

Biology Education Specialization

Associate in Science Degree

(P2160 TEBIO)

Note: Biology education majors requiring developmental courses in math must complete MAT-016 Intermediate Algebra prior to taking courses in Biology and Chemistry.

This program is designed for transfer to a four-year program leading to certification for teaching, which requires an academic major (Biology) and professional education courses. Students are advised by either the Teacher Education advisor or by a faculty advisor from the Biology and Chemistry department.

General Education Foundation

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<td>COM-109 Speech Fundamentals</td>
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<td>Math-Science-Technology</td>
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<td>MAT-123 Precalculus</td>
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General Education Electives | 6 |

| Literature Survey or Language Sequence | |

General Education Foundation Credits | 32-33 |

Biology Education Core

| CHM-125 General Chemistry I - Lecture | 3 |
| CHM-126 General Chemistry I - Laboratory | 1 |
| CHM-127 General Chemistry II - Lecture | 3 |
| CHM-128 General Chemistry II - Laboratory | 1 |
| BIO-121 General Biology I | 4 |
| BIO-122 General Biology II | 4 |
| Select one of the following: | 4 |
| BIO-201 Genetics (Spring Only) | |
| BIO-202 Ecology (Fall Only) | |

Biology Education Core Credits | 20 |

Teacher Education Core

| HED-286 Personal Health & Wellness | 3 |
| EDU-111 Teaching in America Contemporary Issues | 3 |
| EDU-211 Behavior Observation in Education | 3 |
| PSY-217 Educational Psychology | 3 |
Chemistry Education Specialization
Associate in Science Degree
(P2152 TECHM)

Note: Chemistry education majors requiring developmental courses in math must complete MAT-016 Intermediate Algebra prior to taking courses in Biology and Chemistry.

This program is designed for transfer to a four-year program leading to certification for teaching, which requires an academic major (Chemistry) and professional education courses. Students are advised by either the Teacher Education advisor or by a faculty advisor from the Biology and Chemistry department.

General Education Foundation

Communication
- ENG-111 English Composition I
- ENG-112 English Composition II
- COM-109 Speech Fundamentals

Math-Science-Technology
- MAT-123 Precalculus
- CMP-101 Elective (see curriculum checksheet for choices)

Social Science
- PSY-113 General Psychology

Humanities
- See curriculum checksheet for History elective choices

Social Science or Humanities
- Choose from General Education course list Humanities or Social Science section

General Education Electives
- Literature Survey or Language Sequence

General Education Foundation Credits: 32-33

Chemistry Education Core
- CHM-125 General Chemistry I - Lecture
- CHM-126 General Chemistry I - Laboratory
- CHM-127 General Chemistry II - Lecture
- CHM-128 General Chemistry II - Laboratory
- CHM-231 Organic Chemistry I - Lecture
- CHM-232 Organic Chemistry I - Laboratory
- CHM-233 Organic Chemistry II - Lecture
- CHM-234 Organic Chemistry II - Laboratory
- MAT-131 Analytic Geometry and Calculus I

Chemistry Education Core Credits: 20

Teacher Education Core
- HED-286 Personal Health & Wellness
- PSY-217 Educational Psychology
- EDU-111 Teaching in America Contemporary Issues
- EDU-211 Behavior Observation in Education

Teacher Education Core Credits: 12

Total Credits: 64-65

English Education Specialization
Associate in Arts Degree
(P1130 TEENG)

This program is designed for transfer to a four-year program leading to certification for teaching, which requires an academic major (English) and professional education courses. Students will be advised by either the Teacher Education advisor or by a faculty advisor from the English Department.

General Education Foundation

Communication
- ENG-111 English Composition I
- ENG-112 English Composition II
- COM-109 Speech Fundamentals

Math-Science-Technology
- MAT-123 Precalculus
- CMP-101 Elective (see curriculum checksheet for choices)

Social Science
- PSY-113 General Psychology
- SOC-120 Principles of Sociology

Humanities
- ENG-249 American Literature From the Colonial to The Civil War
- ENG-250 American Literature From the Civil War To the Twentieth Century

Humanities Elective
- Choose from General Education course list Humanities Section

Social Science
- See curriculum checksheet for History sequence choices

History
- Diversity

English Core
- ENG-243 World Literary Traditions: Beginnings to 1650
- ENG-244 World Literary Traditions: 1650 to Present

General Education Foundation Credits: 45

Teacher Education Core
- EDU-111 Teaching in America Contemporary Issues
- EDU-211 Behavior Observation in Education
- PSY-217 Educational Psychology
- HED-286 Personal Health & Wellness

Teacher Education Core Credits: 12

Total Credits: 64-65

Science courses completed by students prior to entering the Chemistry option must be less than seven years old. If the science courses exceed the seven-year limit, students can prove their competency by testing or they must retake courses.
### Exercise Science Health/Physical Education Specialization

**Associate in Science Degree**
(P2960 TEPED)

This program is designed for transfer to a four-year program leading to careers in Physical Education. Students will be advised by the Teacher Education advisor or a faculty advisor from the Health and Physical Education Department.

#### General Education Foundation

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
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<tr>
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<tr>
<td>ENG-111 English Composition I</td>
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<td>ENG-112 English Composition II</td>
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<td>CMP-110 Introduction to Data Processing</td>
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<td>or CMP-203 Computer Software Applic. (MS Office)</td>
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<td><strong>Social Science</strong></td>
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<td>PSY-113 General Psychology</td>
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<td>BIO-101 Anatomy and Physiology I</td>
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<td>BIO-102 Anatomy and Physiology II</td>
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#### Teacher Education Physical Education Core

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<th>Course</th>
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<td>HES-111 Introduction to Exercise Science</td>
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<td>HED-115 Personal and Family Nutrition</td>
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<td>HED-286 Personal Health &amp; Wellness</td>
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<td>HES-211 Kinesiology</td>
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<td>HED-295 First Aid and Emergency Care</td>
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<td>HED-283 Cardiopulmonary Resuscitation</td>
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<td>HES-212 Exercise Physiology</td>
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<td>HES-213 Exercise Measurement and Prescription</td>
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<td>PSY-217 Educational Psychology</td>
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<td>EDU-111 Teaching in America Contemporary Issues</td>
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<td>Exercise Science Restricted Electives</td>
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**Teacher Education Physical Education Core Credits** 33

**Total Credits** 66

### Mathematics Education Specialization

**Associate in Science Degree**
(P2150 TEMAT)

This program is designed for transfer to a four-year program leading to certification for teaching, which requires an academic major (Mathematics) and professional education courses. Students are advised by the Teacher Education advisor or a faculty advisor from the Mathematics department.

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<td>ENG-111 English Composition I</td>
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<td><strong>Technology</strong></td>
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<td><strong>Social Science</strong></td>
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<td>PSY-113 General Psychology</td>
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#### Mathematics Core

Select one of the following: 15-16

<table>
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<tr>
<td>MAT-123 Precalculus</td>
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<tr>
<td>&amp; MAT-131 and Analytic Geometry and Calculus I</td>
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<tr>
<td>&amp; MAT-132 and Analytic Geometry &amp; Calculus II</td>
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<tr>
<td>&amp; MAT-230 and Calculus III</td>
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<td>MAT-131 Analytic Geometry and Calculus I</td>
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<td>&amp; MAT-230 and Calculus III</td>
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<td>&amp; MAT-232 and Differential Equations</td>
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**Mathematics Core Credits** 15-16

#### Teacher Education Core

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<td>EDU-111 Teaching in America Contemporary Issues</td>
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<tr>
<td>EDU-211 Behavior Observation in Education</td>
<td>3</td>
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<tr>
<td>MAT-228 Linear Algebra</td>
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<td>HED-286 Personal Health &amp; Wellness</td>
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<tr>
<td>PSY-217 Educational Psychology</td>
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</table>

**Teacher Education Core Credits** 15

**Total Credits** 62-63
Social Studies (History) Education Specialization
Humanities/Social Science Associate in Arts Degree
(P1130 TEHIS)

This program is designed for transfer to a four-year program leading to certification for teaching, which requires an academic major (History) and professional education courses. Students are advised by the Teacher Education advisor or a faculty advisor from the History and Political Science department.

General Education Foundation

<table>
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<td>ENG-111 English Composition I</td>
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<td>ENG-112 English Composition II</td>
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<td>COM-109 Speech Fundamentals</td>
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<td>Laboratory Science</td>
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<td>Social Science</td>
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<td>PSY-113 General Psychology</td>
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<td>HIS-113 &amp; HIS-114 Early Modern Europe and Modern Europe</td>
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General Education Foundation Credits: 45

Teacher Education Core

| EDU-111 Teaching in America Contemporary Issues | 3 |
| EDU-211 Behavior Observation in Education | 3 |
| PSY-217 Educational Psychology | 3 |
| HED-286 Personal Health & Wellness | 3 |

Teacher Education Core Credits: 12

History Core and Free Elective

| HIS-204 History of the African American Experience | 3 |
| or HIS-209 History of American Women |   |
| Free Elective | 3 |
| History Core and Free Elective Credits | 6 |

Total Credits: 63

Social Studies (Psychology) Education Specialization
Humanities/Social Science Associate in Arts Degree
(P1130 TEPSY)

This program is designed for transfer to a four-year program leading to certification for teaching, which requires an academic major (Psychology) and professional education courses. Students are advised by the Teacher Education advisor or a faculty advisor from the Psychology and Education department.

General Education Foundation

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<tr>
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<td>ENG-112 English Composition II</td>
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<td>Math-Science-Technology</td>
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<td>Laboratory Science</td>
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<td>SOC-120 Principles of Sociology</td>
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General Education Foundation Credits: 45

Teacher Education Core

| EDU-111 Teaching in America Contemporary Issues | 3 |
| EDU-211 Behavior Observation in Education | 3 |
| PSY-217 Educational Psychology | 3 |
| HED-286 Personal Health & Wellness | 3 |
| Psychology Core/Free Electives | 6 |

Teacher Education Core Credits: 18

Total Credits: 63

Social Studies (Sociology) Education Specialization
Humanities/Social Science Associate in Arts Degree
(P1130 TESOC)

This program is designed for transfer to a four-year program leading to certification for teaching, which requires an academic major
(Sociology) and professional education courses. Students are advised by the Teacher Education advisor or a faculty advisor from the Sociology, Economics and Anthropology department.

### General Education Foundation

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#### Total Credits

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### Teacher Education Core

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**Teacher Education Core Credits**

12

### Sociology Specialization Core

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**Total Credits**

63

### Spanish Education Specialization

**Humanities/Social Science Associate in Arts Degree**

(P1130 TESP)

This program is designed for transfer to a four-year program leading to certification for teaching and requires an academic major (Spanish) and professional education courses. Students are advised by the Teacher Education advisor or a faculty advisor from the Languages and ESL department.

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**Total Credits**

7-9

### Visual Arts Education Specialization

**Associate in Fine Arts Degree**

(P4140 TEART)

This program is designed for transfer to a four-year program leading to certification for teaching and requires an academic major (Art) and professional education courses. Students are advised by the Teacher Education advisor or a faculty advisor from the Visual Arts department.

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**Total Credits**

63
### Faculty

Diana Aria  
Assistant Professor, Psychology and Education  
Special Projects Faculty, Teacher Education  
Ed.S. Philadelphia College of Osteopathic Medicine  
M.S. Philadelphia College of Osteopathic Medicine  
B.A. Elizabethtown College  
DH 323 973-328-5601 daria@ccm.edu

### Courses

#### EDU-111. Teaching in America. 3 Credits.  
LECT 3 hrs.  
This course presents the historical and philosophical foundations of American education and how they relate to contemporary issues facing teachers in America today. The goal is to provide students with a comprehensive understanding of the development of the teaching profession including both its roots and modern-day direction. The course offers theoretical and practical learning experiences including 5 hours of field experiences in public schools.  
**Prerequisites:** All basic skills/remediation in English must be completed. Permission of department chair, Cumulative GPA of 3.0 or higher  
**Corequisites:** PSY-113.

#### EDU-211. Behavior Observation in Education. 3 Credits.  
LECT 3 hrs.  
This course uses weekly seminars and 20 hours of field experience in public schools to integrate theory and classroom observations in order for prospective teachers to understand curriculum development and instructional methods. Aspiring teachers learn how to use descriptive research methods to gain insight into the instructional needs of learners by observing them in their natural classroom settings. Armed with this experiential knowledge, students use the seminar to report and discuss their observed findings, as well as relate this practical information to the theories of curriculum development and instructional strategies.  
**Prerequisites:** EDU-111, PSY-113 and permission of department chair, Cumulative GPA of 3.0 or higher  
**Corequisites:** PSY-217.
Technical Studies
Associate in Applied Science Degree

The focus of this program is to provide a vehicle for alternately trained professionals to attain their educational goals by awarding credit for those training, internship, apprenticeship and other educational experiences that can be adequately evaluated and measured.

For more information, visit the Information Technologies (http://www.ccm.edu/academics/divdep/BMET/infotech) website.

Degrees
AAS Technical Studies
(P3510)

General Education Foundation
- Communication: 6
  - ENG-111 English Composition I
  - ENG-112 English Composition II
- Math-Science-Technology: 3-4
  - MAT-110 College Algebra
  - or MAT-124 Statistics
  - or MAT-130 Probability and Statistics
- Social Science: 3
  - SOC-120 Principles of Sociology
- General Education Electives: 12
  - Humanities Elective 1
  - Humanities Elective 2
  - Science Elective
  - PSY-113 General Psychology

General Education Foundation Credits: 24-25

Technical Studies Core
Select from one of the following concentrations: 1

Computer Information Systems
- CMP-120 Foundations of Information Security
- CMP-123 Systems Analysis and Design
- CMP-124 Network Security
- CMP-125 Information Security Management Security
- CMP-128 Computer Science I
- CMP-129 Computer Science II
- CMP-200 Computer Operating Systems and Utilities
- CMP-203 Computer Software Applications (ms Office)
- CMP-205 Database Programming (MS Access)
- CMP-207 Electronic Spreadsheets (MS Excel)
- CMP-209 Introduction to UNIX
- CMP-237 Visual Basic (VB.Net)
- CMP-239 The Internet and Web Page Design
- CMP-243 Ethical Hacking and Systems Defense

Digital Media Technology
- MED-110 Multimedia I
- MED-113 Multimedia II
- MED-114 Media Aesthetics
- MED-119 Digital Media Production
- MED-210 Digital Video Editing
- MED-213 Multimedia Authoring and Design
- MED-220 Animation
- MED-240 Advanced Animation
- CMP-108 Game Design Concepts
- CMP-126 Computer Technology and Applications
- CMP-239 The Internet and Web Page Design
- CMP-244 Web Design II
- CMP-245 Web Design Tools

Telecommunication
- TEL-109 Introduction to Telecommunications
- TEL-110 Routing I (CISCO)
- TEL-120 Routing II (CISCO)
- TEL-220 Routing III (CISCO CCNA3 & CCNA4)
- TEL-233 Network Operating Systems
- TEL-234 Telecommunications Systems
- ELT-110 Digital Principles
- ELT-209 Advanced Digital and Microprocessors
- ENR-119 Technical Computer Applications
- ENR-120 Technical Computer Programming

Electronic Technology
- ELT-110 Digital Principles
- ELT-115 Active Circuit Components
- ELT-201 Electricity and Electronics
- ELT-213 Active Circuit Design
- ELT-215 Industrial Electronics
- ELT-231 Electronic Communication Systems
- ENR-119 Technical Computer Applications
- ENR-120 Technical Computer Programming

Total Credits: 63-64

Three to 25 Technical Studies elective credits may be earned for corporate, industrial or military training programs after review by faculty assessor of related program.

1 Individuals must select at least four courses in one of the concentrations listed below to satisfy the Technical Studies credit requirements.
ENR-124  Instrumentation and Measurements
TEL-110  Routing I (CISCO)

Mechanical Technology
ENR-117  Computer-Aided Drafting I
ENR-118  Computer-Aided Drafting II
ENR-124  Instrumentation and Measurements

MAT-113  Applied Calculus
MEC-104  Statics
MEC-117  Mechanical Prototyping
MEC-118  Computer Integrated Manufacturing (CIM)
MEC-141  Strength of Materials for Engineering Technology
MEC-155  Mechanical Components
MEC-236  Machine Design

Electro/Mechanical Technology
ELT-110  Digital Principles
ELT-201  Electricity and Electronics
ELT-210  Electronic Fabrication
ENR-117  Computer-Aided Drafting I
ENR-119  Technical Computer Applications
ENR-124  Instrumentation and Measurements
MEC-110  Materials for Engineering Technology
MEC-141  Strength of Materials for Engineering Technology
MEC-155  Mechanical Components
MEC-236  Machine Design
TEL-110  Routing I (CISCO)

Age-of-Credit Policy:  Technology-based courses taken by a student at least seven years prior to the time the student applies for graduation may not be applied to a degree or certificate within the Department of Information Technologies.

Courses

CMP-101. Computer Information Literacy. 1 Credit.
LECT 1 hr., LAB 1.5 hr.
This general education course provides students with an introduction to basic computer concepts that include learning the fundamentals of Windows, accessing the World Wide Web and using Microsoft Word. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-104. Internet Literacy. 3 Credits.
LECT 3 hrs.
This general education course provides an in-depth study of the Internet and the knowledge necessary to be a contributing user of the World Wide Web. Topics covered include ISPs, browsers, search engines, netiquette, email, newsgroups, streaming media, file types, and societal issues and trends. This course is offered online. Not for Computer Information Systems majors.
Additional Fees: Course fee applies.

CMP-108. Game Design Concepts. 3 Credits.
LECT 3 hrs.
This course provides the student with an introduction to fundamental game design concepts. The range of topics includes game worlds and settings, character creation, storytelling, game audio, game art and animation, gameplay and user interface design. In addition, the history of the game industry, social impact and the future of gaming are discussed. Students analyze various games and genres and create their own game design document.
Additional Fees: Course fee applies.

CMP-110. Introduction to Data Processing. 3 Credits.
LECT 3 hrs.
Topics in this general education course include computer hardware and software concepts, application and systems software, the Internet and World Wide Web, data communications, and the social impact of computers. Problem solving using software application packages will be implemented. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Additional Fees: Course fee applies.

CMP-120. Foundations of Information Security. 3 Credits.
LECT 3 hrs.
This course provides a principled introduction to the field of information security. History, characteristics and models of information and computer security are explored. Topics such as risk management, logical and physical security, continuity, cryptography, and architecture are discussed. The CISSP knowledge domains are incorporated into the course content affording the student reinforcement and mastery of information security terminology and concepts.
Additional Fees: Course fee applies.

CMP-123. Systems Analysis and Design. 3 Credits.
LECT 3 hrs.
Techniques of object-oriented and structured systems analysis and design are examined in the context of the software development life cycle. Topics include project management, Unified Modeling Language (UML) diagrams, data flow diagrams, system flow charts, application and user-interface design. Class projects provide students with practice in using CASE tools in the analysis and design of application systems. Students participate in a semester-long team project to design an application.
Prerequisites: CMP-128 and one of the following: CMP-129, CMP-150, CMP-237, CMP-239
Additional Fees: Course fee applies.

CMP-124. Network Security. 3 Credits.
LECT 3 hrs.
This course provides an in-depth study of network attack techniques and methods to defend against them. Areas of study include communication security, infrastructure security, cryptography, and operational and organizational security as it relates to network hardware, software and data. Topics include authentication, attacks, virtual private networks, email protection, web security, wireless, firewalls, intrusion detection, cryptography, disaster recovery and computer forensics regarding networked systems. Using a hands-on approach, powerful tools to diagnose and correct security breaches are investigated and manipulated. This course is mapped to a vendor-neutral certification exam.
Additional Fees: Course fee applies.
CMP-125. Information Security Management Security. 3 Credits.
LECT 3 hrs.
This course entails identifying an organization’s information assets and the development, documentation and implementation of policies, standards, procedures and guidelines that ensure confidentiality, integrity and availability of those assets. This course prepares students to understand the planning, organization and roles of individuals involved in security, to develop security policies, and to utilize management tools to identify threats, classify assets and rate vulnerabilities. A detailed, real-world security plan is developed using customized strategies with an in-depth study of PKI (Public Key Infrastructure).

Additional Fees: Course fee applies.

CMP-126. Computer Technology and Applications. 4 Credits.
LECT 3 hrs., LAB 2 hrs.
This general education course teaches: (1) basic computer-use concepts such as hardware and peripherals, file organization and management, and operating system use; (2) Internet use, browsers and search engines; (3) software applications including word processing, spreadsheet, electronic slideshow presentations, database use and calendaring; (4) netiquette, ethics and copyright policies; (5) downloading and installing software and plug-ins; (6) communications technologies including email, blogs and Web technologies; (7) personal computer and information security; and (8) career exploration, job search strategies and portfolio development. Students are required to complete a series of laboratory assignments that illustrate skills and use technologies in the areas listed including a cross-applications/technologies project. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.

Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007

Additional Fees: Course fee applies.

 CMP-128. Computer Science I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
In this introductory course, students obtain fundamental computer science knowledge and develop programming skills using an object-oriented approach, incorporating security awareness, human-computer interactions and social responsibility. This course provides students with a basic foundation in computing history, computing careers, computer organization, operating system responsibilities, software development process, algorithm design and analysis, programming paradigms, and human interaction design.

Prerequisites: MAT-007 or equivalent

Additional Fees: Course fee applies.

CMP-129. Computer Science II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is the second in a three-course sequence that provides students with a foundation in Computer Science. Students develop intermediate-level programming skills using an object-oriented approach with an emphasis on software development, fundamental algorithms and data structures, software assurance, and ethical conduct.

Prerequisites: CMP-128 or equivalent

Additional Fees: Course fee applies.

CMP-150. Game Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course covers fundamental game programming techniques using an industry-standard scripting language. Students learn how to use a popular game engine to build game programs. Topics include sprites, animation, collisions, timers, game state variables, player input, audio, user interface design and storyboarding. Laboratory work includes several game element programming exercises, leading up to a final game project.

Prerequisites: CMP-128 or equivalent

Additional Fees: Course fee applies.

CMP-160. Digital Forensics I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces the student to the fundamental concepts of computer forensics. By conducting a detailed examination of data media for structure, file system type, volumes, lost and hidden areas, the student will develop the ability to collect and analyze computer data for digital evidence. An understanding of specific resources and an exploration of software tools available for data recovery and forensic analysis will be conducted in a laboratory setting. Upon completion of this course the student will demonstrate various data recovery techniques as the basis for forensic evaluation.

Additional Fees: Course fee applies.

CMP-170. Mobile App Design. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to the design and development of mobile applications. Students will learn how to install and use a leading mobile app software development kit, design the user interfaces using different design patterns, create and edit app resources, and design and develop native source code. Students will strengthen their programming skills in user input, variables, operations, decision control structures, methods, lists and arrays. Audio, images, animation and other application controls will be incorporated into apps. Other topics include testing, deployment and publishing apps.

Prerequisites: CMP-128

Additional Fees: Course fee applies.

CMP-200. Computer Operating Systems and Utilities. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is an introductory course in personal computer operating systems. Topics include the features and characteristics of operating system software; installation and configuration including customization, file organization and management; memory and storage management; control of peripheral devices; troubleshooting; networking wizards; and the use of utilities to monitor system performance, backup data and optimize disks. Laboratory assignments provide hands-on opportunities for students to apply the information related in lectures.

Additional Fees: Course fee applies.
CMP-203. Computer Software Applications (MS Office). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This general education course is designed to provide familiarity with contemporary software for word processing, electronic spreadsheets and database applications in a personal computer environment. An introduction to web browser software, electronic slide production and information management is also included. Students are required to complete a series of laboratory assignments that illustrate skill in using the above software applications including a cross-application project. Students must allocate time to complete assignments using current versions of the software (available on campus). Computer Information Systems majors must have department approval to take this course. Students will not receive credit toward graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-205. Database Programming (MS Access). 3 Credits.
LECT 3 hrs., LAB 1 hr.
It is recommended that students take CMP-207 Electronic Spreadsheets before taking CMP-205. This course is designed to develop skill in the use of a leading database management system. Topics include the design and maintenance of relational databases and their objects (tables, queries, forms and reports). Also covered is the use of macros to implement procedures. The final portion of the course covers automation techniques by introducing the Visual Basic for Applications programming language and the use of this code to create a user-friendly interface.
Additional Fees: Course fee applies.

CMP-207. Electronic Spreadsheets (MS Excel). 3 Credits.
LECT 3 hrs., LAB 1 hr.
It is recommended that students take CMP-207 Electronic Spreadsheets before taking CMP-205. This is a course in problem solving using a popular spreadsheet program. Emphasis is on construction of elementary to moderately complex worksheets; charting worksheet data, database definitions and reporting; and using VBA (Visual Basic for Applications) to construct simple macros.
Additional Fees: Course fee applies.

CMP-209. Introduction to UNIX. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course combines lecture with hands-on training in the UNIX Operating System. Upon successful completion of this course, students are proficient in using the UNIX Operating System commands and utilities. Topics include purpose and functions of an operating system, hierarchical file system, the shell, vi editor, file security, process management, sorting, networking theory and communications, redirection, piping, and an introduction to shell scripts.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-217. Cooperative Work Experience-Information Technologies. 3 Credits.
COOP 3 hrs.
This course provides students in the Department of Information Technologies programs with job training and practical experience in a work environment prior to permanent career employment. This course may be taken in fulfillment of the Computer Information Systems elective. Interested students should consult with the department chair. Computer Information Systems majors only
Prerequisites: Permission of department chair

CMP-218. Cooperative Work Experience Information Technologies - Related Class. 1 Credit.
LECT 1 hr.
A supplement to the Department of Information Technologies Cooperative Work Experience, this course provides a variety of exercises that further develop the students' technical and communication skills, occupational adjustment, and career planning. This course is offered online. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Corequisites: CMP-217.

CMP-230. Computer Architecture and Assembly Language. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is an introduction to computer architecture and assembly language programming. Topics covered include digital logic and data representation, computer architecture and organization, interfacing and input/output strategies, memory architecture, functional organization, and multiprocessing. Students are exposed to basic assembly language programming techniques in laboratory assignments.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-233. Data Structures and Algorithms. 3 Credits.
LECT 3 hrs., LAB 1 hr.
The course includes advanced computer science topics dealing with logical structures of data and the design and analysis of computer algorithms operating on these structures. The course concentrates on data structures such as linked lists, trees, queues, stacks, hash tables and graphs. Algorithms covered include stacks, queues, hash tables, trees, graphs, heaps, sorting and searching. Both iterative and recursive algorithms are explored with analysis of their efficiency. Problems and computer exercises implementing the above structures and techniques are assigned.
Prerequisites: CMP-129 or equivalent and MAT-123 or higher
Additional Fees: Course fee applies.

CMP-235. Advanced UNIX. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is a continuation course in UNIX programming with emphasis on building upon the previously developed skills. Topics include an in-depth coverage of shell scripts, system administration, GUIs, differences and similarities between shells, higher-level programming languages in the UNIX environment, the Internet, sorting, and other advanced topics.
Prerequisites: CMP-209
Additional Fees: Course fee applies.
CMP-237. Visual Basic (VB.Net). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is a fundamental course in object-oriented programming in a Windows environment. Topics include form design, managing controls, handling variables and constants, using decision and loop structures to construct efficient code, handling built-in functions, and simple debugging techniques for detecting errors. Basic fundamentals of classes are introduced.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-239. The Internet and Web Page Design. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is an in-depth study of the Internet and its various services that allows students to appreciate the impact of the Internet in society. Students create World Wide Web home pages using strict Hypertext Markup Language, Cascading Style Sheets (CSS) and XHTML. Other current specifications also are discussed.
Additional Fees: Course fee applies.

CMP-241. Database Programming (Oracle). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course uses the rules and syntax of an industrial-strength database programming language that can be used on all types of computers. Topics include relational database aspects, data input and validation, creation and maintenance of files, query, user control center, and application generator. Emphasis is on development of programs related to business database applications.
Prerequisites: CMP-113 or equivalent or permission of department chair
Additional Fees: Course fee applies.

CMP-243. Ethical Hacking and Systems Defense. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course combines an ethical methodology with the hands-on application of security tools to better help students secure and defend their systems. Students are introduced to common countermeasures that effectively reduce and/or mitigate attacks. This class is designed to help students prepare for professional careers in the information security field and the Certified Ethical Hacker (CEH) certification exam.
Prerequisites: CMP-128
Additional Fees: Course fee applies.

CMP-244. Web Design II. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course is a continuation of The Internet and Web Page Design with an emphasis on more advanced concepts and techniques. Topics include Cascading Style Sheets, forms, JavaScript and other current scripting languages. Students learn to work with hosting and web server technology. For their final project, students build a website using these techniques.
Prerequisites: CMP-239
Additional Fees: Course fee applies.

CMP-245. Web Design Tools. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Students learn the leading web design and development tools including the Adobe Creative Suite. Instruction and practice in the suite provides seamless integration and a unified user interface across all tools to streamline multimedia and web development. Through hands-on practice, activities and relevant project application, students develop competence in the use of industry-leading development tools.
Prerequisites: CMP-108 or CMP-128 or CMP-239 or MED-110 or GRD-111
Additional Fees: Course fee applies.

CMP-246. Operating Systems. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to operating systems and their uses and design concerns. Covered are the roles and responsibilities of operating systems including scheduling, concurrency and process synchronization, memory management, file organization and management, and control of peripheral devices. Security and protection topics are also addressed. Laboratory assignments provide interactive learning experiences which demonstrate operating system concepts using programming, operating system commands and scripting.
Prerequisites: CMP-129
Additional Fees: Course fee applies.

CMP-249. Advanced Web Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in Web Development introduces the student to creating interactive and dynamic Web sites using current Web programming. Building on concepts and principles of computer programming and scripting languages, students will interact with Web server technologies and develop front end, advanced professional Web sites with fully functional back end support.
Prerequisites: CMP-128 and CMP-244
Additional Fees: Course fee applies.

CMP-250. Game Production. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Working in teams, students combine their game design and programming skills to explore the practical challenges of managing the development of games. Industry-standard software and advanced programming are used in this capstone course to develop a functioning game of the highest professional quality. Emphasis is placed on the game design document, storyboarding, the game production process, user interface and game design, interactive storytelling, character development, 3D animation, special effects, audio, the collaborative process, and usability testing.
Prerequisites: CMP-150 or MED-220
Additional Fees: Course fee applies.
CMP-261. Digital Forensics II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in digital forensics will enable the student to understand advanced file system forensics, the theory of forensic procedures, review of identification, imaging, and authentication, review of FAT file system, NTFS and EXT3 file systems, partitioning, Windows’ logical analysis, email analysis, and web history analysis conducted in a laboratory setting. Upon completion of this course the student will apply investigative methodology as it applies to data artifacts, including where they are found in computer operating systems, and how they are deployed in digital forensics. The student will perform forensic media acquisition and verification.
Prerequisites: CMP-160
Additional Fees: Course fee applies.

CMP-290. Independent Study in Information Technology. 3 Credits.
LECT 3 hrs.
Students, in consultation with the department chair, undertake an in-depth analysis of a selected topic, problem or issue related to information technology or pursue additional computer-related work experience. Students are responsible for developing a statement of goals and strategies, maintaining a weekly log, and preparing a written and oral summary report. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-291. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-292. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course(s) is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-293. Special Topics in Information Technology II. 1 Credit.
LECT 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

ELT-110. Digital Principles. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course develops the fundamentals of the binary system. Circuit implementation from Boolean functions and map minimization. Course includes study of combinational logic, sequential logic circuits, flip-flops, counters and shift register. The laboratory allows the student to apply theory to practical digital circuits.
Additional Fees: Course fee applies.

ELT-115. Active Circuit Components. 3 Credits.
LECT 2 hrs., LAB 4 hrs.
This course introduces the behavior of semiconductor electronic devices and develops the device characteristics. Some DC and AC circuit theory is expanded upon so that the active devices can be properly analyzed. Biasing techniques and models of amplifier configurations are stressed for the bipolar transistor and field effect devices. Diodes, rectifiers, filtering and switching circuit applications are studied. Laboratory includes the verification of device characteristics and the testing of basic amplifier and switching configurations.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ELT-121. Circuit Analysis. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course introduces the student to both DC and AC circuit theory. It includes Ohm’s and Kirchoff’s laws for analysis of series and parallel circuits. Computer circuit simulation of series-parallel, ladder and bridge networks in both DC and AC are analyzed. Resonance and frequency response are included along with some discussion of AC power and transformers. The laboratory experiments are designed to support the theory and obtain measurement skills.
Prerequisites: MAT-110 and ENR-124
Additional Fees: Course fee applies.

ELT-123. Studio Maintenance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
For Music Recording majors only. This course provides students an introduction to music studio electronics. Basic skills of working with electronic components are covered, including soldering, the use of electronic measuring equipment and troubleshooting procedures. Studio cabling and infrastructure are dealt with extensively. Various wiring schemes and grounding techniques are examined to give the student an understanding of the typical music studio layout found in the professional environment. This course is for Music Recording majors only and does not serve as a technical elective for the Electronics Engineering Technology major. This course is offered in the Fall and Spring semesters.
Prerequisites: MUS-165
Additional Fees: Course fee applies.

ELT-200. Biomedical Electronics. 3 Credits.
LECT 3 hrs.
This course is the study of the techniques and theory behind the instrumentation utilized in hospital and health-related laboratory work. Emphasis is placed on physiological signals derived from the body and the problems and safety issues associated with their measurement. Demonstrations are conducted in class.
Prerequisites: ELT-115 and ELT-201

ELT-201. Electricity and Electronics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is a fundamental study of electricity and electronics for Engineering Technology majors. The principles of electrical components and circuits are studied in class and laboratory. Topics include DC, AC series and parallel circuits, transformers and power supplies, solid state amplifiers and control components. The laboratory enables the student to apply the theory discussed in class and to gain some proficiency in the use of electronic measuring equipment.
Prerequisites: MAT-110 or equivalent and ENR-124
Additional Fees: Course fee applies.
ELT-209. Advanced Digital and Microprocessors. 4 Credits. 
LECT 3 hrs., LAB 3 hrs.
This course is an extension of digital theory into the operation and interfacing of microprocessors. Major topics include sequential logic design, memory organization, microprocessor architecture, machine level programming, A/D and D/A conversion, and serial and parallel interfacing. An associated laboratory provides for hands-on microprocessor interfacing and the use of logic analyzers. 
Prerequisites: ELT-110 and ENR-120 or CMP-128
Additional Fees: Course fee applies.

ELT-210. Electronic Fabrication. 1 Credit. 
LAB 3 hrs.
This course provides students with an opportunity to learn about the process involved in the fabrication of electronic circuit boards. Using computer-aided drafting tools, students create an electronic component layout and necessary art work for the construction of a printed circuit board. Students are introduced to project management concepts and techniques, soldering, test specifications and printed circuit board construction. A term project or a series of smaller projects enables students to manage, build and assemble a printed circuit board and develop test specifications. 
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ELT-213. Active Circuit Design. 4 Credits. 
LECT 3 hrs.; LAB 3 hrs.
This course covers analysis and design of solid-state amplifiers using bipolar and field effect transistors. Topics include frequency response using Bode plots and feedback analysis as applied to operational amplifiers and oscillators. Laboratory verification includes transistors, amplifiers, power amplifiers, IC operational amplifiers and oscillators. 
Prerequisites: ELT-115 and either ELT-121 or ELT-201
Additional Fees: Course fee applies.

ELT-215. Industrial Electronics. 4 Credits. 
LECT 3 hrs., LAB 3 hrs.
This course covers operational amplifiers in linear, non-linear and active filter applications, pulse and wave-shaping techniques, power supplies and regulators, thyristor control of power and transducers. The laboratory includes experiments in design and tests to support the above topics. 
Prerequisites: ELT-209 and ELT-115
Additional Fees: Course fee applies.

ELT-227. Biomedical Clinical Experience. 3 Credits. 
LECT 3 hrs.
This course provides the student with a 200-hour internship at a local hospital. The student assists in the maintenance and calibration of biomedical electronic equipment. The student must abide by any rules and regulations stipulated in the affiliation agreement with the partnering hospital. As a minimum, the student is required to purchase liability insurance and agree to a criminal background check. 
Prerequisites: ELT-200 and permission of department chair
Additional Fees: Course fee applies.

ELT-230. Optoelectronics. 3 Credits. 
LECT 2 hrs., LAB 3 hrs.
This course covers principles of light and linear optics characteristics of electro-optical light sources and detectors and their applications in industry, displays and communication (fiber optics). Lab experiments demonstrate electro-optical measurements and designs of typical applications of electro-optical devices. 
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ELT-231. Electronic Communication Systems. 4 Credits. 
LECT 3 hrs., LAB 3 hrs.
This course covers A.M., F.M., and single side-band communication systems, including an introduction to digital transmission. Designed to familiarize the student with transmitters, receivers, modems, noise analysis, information theory, pulse modulation, sampling, coding, multiplexing and other signal processing techniques used in commercial broadcasting and data transmission systems. The course includes some coverage of transmission lines, antennas, microwaves and satellites. Includes laboratory work involving communication system components and techniques using industrial grade equipment. 
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ELT-239. Cooperative Work Experience Electronics Engineering Technology. 3 Credits. 
This course provides a field experience in the laboratory facilities of an industrial firm. The course is designed for students in the Electronics Engineering Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Students must have completed 35 credits to enroll. 
Prerequisites: Permission of department chair.

ELT-291. Special Topics in Electronics Engineering Technology. 3 Credits. 
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information. 
Prerequisites: Permission of department chair.

ELT-292. Special Topics in Electronic Engineering Technology. 3 Credits. 
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information. 
Prerequisites: Permission of department chair.

ENR-103. Basic Engineering Graphics I. 1 Credit. 
LAB 3 hrs.
Students learn fundamentals of engineering drawing through freehand sketching. Course includes developing orthographic views including auxiliary views, dimensioning, sectioning, tolerancing, threads, fasteners, springs and assembly drawings. Course includes creation of pictorial drawings.
ENR-117. Computer-Aided Drafting I. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is an introduction to the concepts and operation of engineering drawing preparation using CAD (computer-aided drafting). The emphasis is on how CAD can reduce drawing time and improve accuracy. Students learn to use the AutoCAD software program to prepare drawings.
Additional Fees: Course fee applies.

ENR-118. Computer-Aided Drafting II. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is a continuation and enhancement of Computer-Aided Drafting I. Topics include prototype drawings, blocks, attributes, x-reference, grips, paper space and development of 3-dimensional solid modeling.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-119. Technical Computer Applications. 1 Credit.
LAB 3 hrs.
This course provides an introduction to the various technical tools available to help solve problems in the field of engineering technology. This is a hands-on laboratory course designed to provide students with experience in using scientific calculators, Windows Operating System, Microsoft Office and Internet search tools. Special emphasis is placed on the development of technical reports using Microsoft Office's EXCEL and Word programs.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

ENR-120. Technical Computer Programming. 2 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an introduction to computer programming with application to engineering technology. Microcomputers are used to develop application programs in a programming language.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

ENR-121. Engineering Graphics. 2 Credits.
LECT 1 hr., LAB 3 hrs.
This course is an introduction to computer aided design software and hardware. Covered are geometric constructions, multiview orthographic projection, dimensioning, sectioning, auxiliary view and axonometric projection and principles of descriptive geometry. A brief introduction to solid modeling is also included. This course is intended for Engineering Science students; Engineering Technology students take ENR-117.
Prerequisites: MAT-123
Additional Fees: Course fee applies.

ENR-123. Introduction to Engineering. 1 Credit.
LECT 1 hr.
This course provides the entering engineering student with an overview of the engineering profession and the design process. Topics discussed include the engineering course of study, academic advisement and transfer processes, types of engineering disciplines, problem-solving techniques, typical software tools, reporting techniques, and study skills.

ENR-124. Instrumentation and Measurements. 2 Credits.
LECT 1 hr., LAB 3 hrs.
This course is an introductory study in the concepts involving physical measurements utilizing hands-on electrical and mechanical measurement applications. Use of basic instruments and transducers, accuracy and precision, units and standards of measurements, accounting and presentation of errors in measurements.
Prerequisites: MAT-007 or equivalent
Corequisites: ENR-119
Additional Fees: Course fee applies.

ENR-125. Computer Programming for Engineers. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
A course in structured and object-oriented programming, emphasizing engineering applications and numerical methods in assignments. Program assignments are coded and are implemented on personal computers.
Prerequisites: MAT-123
Additional Fees: Course fee applies.

ENR-126. Computer Aided Design and Applications. 2 Credits.
LECT 1 hr., LAB 4 hrs.
An introductory course in computer aided design using parametric solid modeling software. Creation of solid models of parts, generation of orthographic views, sectional views and auxiliary views are covered. Dimensioning and tolerancing of parts is emphasized along with development of appropriate files to make the parts for product development using rapid prototyping (3-D printing) and to manufacture parts using computerized numerical control machines.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-220. Hydraulics and Fluid Power. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an exploration into the relationship between pressure, density and temperature as they relate to hydraulic and pneumatic systems. Topics include hydraulic pumps, motors and air compressors. The course emphasizes use of engineering standards and specifications for circuit design and component selection. Electrical controls and application to systems are covered. Lab sessions further expand upon lectures by providing students with physical evidence to support theories and ideas acquired in class.
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ENR-222. Mechanics of Solids. 3 Credits.
LECT 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending and combined stresses and column buckling. Also covered are axial force, shear moment and torque in structural members and in statically indeterminate systems. Elementary failure theory of structures and mechanical components is discussed.
Prerequisites: ENR-223.

ENR-223. Engineering Mechanics I (Statics). 3 Credits.
LECT 3 hrs.
This course is a vector approach to statics in a plane and in three dimensions, equilibrium of particles and rigid bodies. Equivalent force systems, structural analysis, centroids and moments of inertia. Virtual work and applied engineering problems are incorporated.
Prerequisites: MAT-131 and PHY-130.
ENR-224. Engineering Mechanics II (Dynamics). 3 Credits.
LECT 3 hrs.
This course is a calculus-based course in dynamics. Kinematics and kinetics of particles and rigid bodies, Newton's laws, work, energy, impulse and momentum are covered. Practical engineering problems are incorporated.
Prerequisites: ENR-223.

ENR-230. Engineering Strength of Materials. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending, and combined stresses and column buckling. Elementary failure theory of structures and mechanical components is discussed. Laboratory covers a variety of tensile stress-strain, impact and hardness tests, as well as shear stress-strain and the techniques of report writing.
Prerequisites: ENR-223
Additional Fees: Course fee applies.

ENR-232. Materials Science. 3 Credits.
LECT 3 hrs.
This course covers the properties and structure of materials: atomic bonding, molecular, crystalline, noncrystalline structures and crystalline imperfections. It also covers metallic phases, equilibrium and nonequilibrium reactions, processing and properties of ferrous and non-ferrous metals, polymers, ceramics and composites. In addition, corrosion phenomenon is discussed.
Prerequisites: CHM-125 and CHM-126 and PHY-130.

ENR-234. Independent Study in Technology. 3 Credits.
LECT 3 hrs.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress.
Prerequisites: Permission of department chair.

ENR-235. Engineering Circuit Analysis I. 3 Credits.
LECT 3 hrs.
This first course in engineering circuit analysis covers DC circuit analysis including source transformations, mesh, nodal, superposition, Thevenin and Norton theorems, and the maximum power transfer theorem. Dependent as well as independent sources are included. Transient response of RC, RL and RLC circuits is introduced. Steady-state analysis of single and three phase AC systems is studied using phasor diagrams and the network theorems mentioned above. Real, reactive, apparent power and power factors are included. Use of the computer as a problem-solving tool is included in the course.
Prerequisites: MAT-132.

ENR-236. Engineering Circuit Analysis Laboratory I. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments in DC, AC and transients to accompany the course work in Engineering Circuit Analysis I.
Corequisites: ENR-235
Additional Fees: Course fee applies.

ENR-237. Engineering Circuit Analysis II. 3 Credits.
LECT 3 hrs.
This is a second course in engineering circuit analysis. Natural and step response of RL, RC and RLC circuits, mutual inductance, ideal transformers, series and parallel resonance are studied. Laplace transform theory is covered and includes step and impulse response in the S-domain. Bode diagrams of simple and quadratic factors are plotted and the computer is used for actual frequency and phase plots. Fourier Series are studied using both trigonometric and exponential forms.
Prerequisites: ENR-235
Corequisites: MAT-232.

ENR-238. Engineering Circuit Analysis Laboratory II. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments on transformers, series and parallel resonance, filters and frequency/phase response plots, and two-port hybrid models to accompany the course work in Engineering Circuit Analysis II.
Prerequisites: ENR-236
Corequisites: ENR-237
Additional Fees: Course fee applies.

ENR-240. Engineering Technology Project. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers the design of products and processes considering functional requirements, manufacturing feasibility and economy, and the use of technical literature and catalogs. Includes design layout and working drawings and group and individual projects.
Prerequisites: ENR-117 and MEC-110 and MEC-141
Additional Fees: Course fee applies.

ENR-241. Instrumentation and Control. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to the study of measuring systems and components, digital and analog signals and their characteristics. Mechanical and electromechanical transducer elements are used to measure pressure, temperature, displacement, velocity and acceleration. Static and dynamic performance of instruments, statistical analysis of experimental data are explored. A brief study of process controllers, programmable logic controllers and final control elements are also explored.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ENR-290. Special Topics in Technology. 1 Credit.
LECT 1 hr.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress when used for independent study. The course is also used to cover either current or future topics of interest in technology. Topics discussed will have relevance to either electronics technology, mechanical technology or both, and may vary each semester.
Prerequisites: Permission of department chair.

ENR-291. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.
ENR-292. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

MEC-104. Statics. 3 Credits.
LECT 3 hrs.
This course provides an analysis of force systems acting on particles and rigid bodies; equilibrium in two and three dimensions; trusses, frames and machines; and friction, centroids and moment of inertia of areas.
Prerequisites: MAT-110, ENR-119 and ENR-124.

MEC-110. Materials for Engineering Technology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers metallic, plastic and ceramic materials that are important to manufacturing. Topics include: molecular and microscopic structures in relationship to material properties, testing of mechanical and thermal properties with reference to ASTM standards, equilibrium diagrams and physical metallurgy emphasizing steel and aluminum, heat treatment of steel, molding and forming methods for plastics. A brief study of ceramics and composites is included.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

MEC-117. Mechanical Prototyping. 2 Credits.
LECT 1.5 hr., LAB 1.5 hr.
This course is a study of the methods of prototyping including an introduction to precision measurements, elementary theory of cutting and machining methods with emphasis on the lathe operation, milling, drilling and grinding. This course runs for eight weeks.
Additional Fees: Course fee applies.

LECT 1.5 hr., LAB 1.5 hr.
This course is a study of the methods of Computer-Aided Manufacturing (CAM) and the related field of Computerized Numerical Control (CNC). Topics include machine setup, CNC code, manual and post processed programs, rapid prototyping, tool offsets, and tool changing. This course runs for eight weeks.
Prerequisites: MEC-117 or industrial experience
Additional Fees: Course fee applies.

MEC-141. Strength of Materials for Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course studies the mathematical determination of stress and deflection for materials having applied loads of normal, shear, torsion, bending or combinations of these. The rational design of mechanical components, such as fasteners, weldments, tanks, shafts, beams and columns, to satisfy stress, deflection and stability criteria are studied. Also included are Mohr’s circle and strain gauge techniques. This course is intended for Engineering Technology students; Engineering Science students should take ENR-230, Engineering Strength of Materials.
Prerequisites: MEC-104 and MAT-110
Additional Fees: Course fee applies.

MEC-155. Mechanical Components. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course develops the fundamentals of sketching, blueprint reading, dimensioning, tolerances, preferred sizes and fits, and evaluating product quality. It also introduces students to the theory of function of mechanical elements such as linkages, cam bearings, gears belt and chain drives, springs, brakes, clutches, welds, keys, fasteners and power screws.
Prerequisites: MAT-007 or equivalent.

MEC-204. Dynamics for Technology. 2 Credits.
LECT 2 hrs.
This course provides an understanding of the mathematics of the motion of particles and rigid bodies, and of the relation of forces and motion of particles. Upon successful completion of this course, students will describe the motion of particles and rigid bodies as functions of time and position, develop their equations of motions due to applied forces, and determine post impact behavior.
Prerequisites: MAT-110, MEC-104
Corequisites: PHY-111.

MEC-229. Cooperative Work Experience-Mechanical Engineering Technology. 3 Credits.
OOOP 3 hrs.
Registration is only upon written recommendation of advisor. This course is a field experience in the laboratory facilities of an industrial firm. It is designed for students in the Mechanical Engineering Technology program to obtain industrial experience as a supplement to college studies prior to career employment. Seminar evaluation visitations are included. Completion of 25 technical credits required to enroll.
Prerequisites: Permission of department chair.

MEC-235. Kinematics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of moving elements as used in the design and analysis of basic mechanisms in machines. Velocity and acceleration analysis on a plane, design and analysis of 4-bar linkages,cams, gears and other mechanisms using graphical and analytical methods are studied.
Prerequisites: MAT-110
Corequisites: PHY-111
Additional Fees: Course fee applies.

MEC-236. Machine Design. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is the rational design and selection of machine elements considering their economics and manufacturability. The principles of strength of materials and mechanics are applied to the design of bearings, shafts, gears, springs, brakes and other elements of importance in mechanical systems. Consideration of service criteria, operating environment and cost. Emphasis is placed on developing a systematic design philosophy.
Prerequisites: MEC-141
Additional Fees: Course fee applies.
MEC-291. Special Topics in Mechanical Engineering Technology. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Mechanical Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Mechanical Engineering Technology.

MEC-292. Special Topics in Mechanical Engineering Technology. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Mechanical Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Mechanical Engineering Technology.

MED-110. Multimedia I. 3 Credits.
LECT 3 hrs.
Multimedia I is a survey course designed to allow students to explore, discuss, develop and use multimedia technology. This computer-based course offers an extensive overview of the technologies of multimedia. Students engage in issues related to usability, management and distribution. Topics include multimedia development and design, media elements, and emerging hardware and software trends. A multimedia prototype project that demonstrates conceptual and technical understanding is required.
Additional Fees: Course fee applies.

MED-111. Multimedia II. 3 Credits.
LECT 3 hrs.
An advanced course designed to allow students to apply the theory and basic practical knowledge presented in Multimedia I. Students apply their knowledge productions for DVD, local networks or the Internet. Students incorporate traditional media production elements such as video and audio combined with the latest features and technologies. Conceptualization, user interface design and prototyping are key course elements. A multimedia prototype project that demonstrates conceptual and technical understanding is required.
Prerequisites: MED-110
Additional Fees: Course fee applies.

MED-112. Media Aesthetics. 3 Credits.
LECT 3 hrs.
Media Aesthetics looks at the importance, influence and meaning of visual images designed for use in electronic media. Through current and historical examples, students learn the principles and significance of media aesthetics including light and color, space and structure, time and motion, and sound, and how they are used to optimize effective communication. Students learn how aesthetic elements of television and multimedia have been translated into vectors - forces that push or pull users in certain directions. Operationally, students learn how to interpret, order, clarify and intensify various communications including fiction, by applying appropriate aesthetic principles. Comparisons between television and multimedia images are closely examined. Students may apply knowledge of media aesthetics by producing projects using broadcast and digital media facilities.
Additional Fees: Course fee applies.

MED-113. Multimedia III. 3 Credits.
LECT 3 hrs.
This course introduces students to the basic operation of a television studio and the production process. Students learn techniques and develop skills in various studio functions including camera, switching, sound, lighting, teleprompter, scriptwriting and directing. Collaboration and teamwork are emphasized.
Additional Fees: Course fee applies.

MED-114. Television Production I. 3 Credits.
LECT 3 hrs.
This course is an introduction to the operation of a television studio and the production process. Students learn basic techniques and develop skills in various studio functions including camera, switching, sound, lighting, teleprompter, scriptwriting and directing. Collaboration and teamwork are emphasized.
Prerequisites: MED-211
Additional Fees: Course fee applies.

MED-116. Television Production II. 3 Credits.
LECT 3 hrs.
This course introduces students to the basic operation of a television studio and the production process. Students learn techniques and develop skills in various studio functions including camera, switching, sound, lighting, teleprompter, scriptwriting and directing. Collaboration and teamwork are emphasized.
Prerequisites: MED-211
Corequisites: MED-210
Additional Fees: Course fee applies.

MED-117. Introduction to Broadcasting. 3 Credits.
LECT 3 hrs.
This course offers a historical and content analysis approach to the study of broadcast and narrowcast communications. Included are the research and study of systems, regulations, program genres, social effects on audiences, and the future of the industry. This is accomplished via lectures and discussions, handouts, reading assignments and in-class viewing and listening assignments.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

MED-119. Digital Media Production. 3 Credits.
LECT 3 hrs.
This course provides students with theory and training in the area of digital content development for digital media productions. Software and hardware training in digital video, audio, animation and graphics are introduced. In addition, the appropriate use of these areas of content in developing digital media productions and interface design are discussed.
Additional Fees: Course fee applies.

MED-210. Digital Video Editing. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Through hands-on learning, Digital Video Editing provides students with the fundamental principles of video editing with a focus on the techniques and technology used to achieve a superior final product. An in-depth exploration of non-linear editing concepts includes a deeper understanding of primary, secondary and tertiary motion, shot types, sequencing, transitions and continuity. Students learn to log and capture raw video, assemble shots on a timeline, create, add, and edit text, audio tracks, title animation, effects, transitions, continuity and video compositing. This course is ideal for students who wish to create and edit a professional video for broadcast, webcast and other motion media venues.
Prerequisites: MED-113 or MED-211
Additional Fees: Course fee applies.

MED-211. Television Production I. 3 Credits.
LECT 3 hrs.
This course introduces students to the basic operation of a television studio and the production process. Students learn techniques and develop skills in various studio functions including camera, switching, sound, lighting, teleprompter, scriptwriting and directing. Collaboration and teamwork are emphasized.
Additional Fees: Course fee applies.

MED-212. Television Production II. 3 Credits.
LECT 3 hrs.
Students employ skills learned in Television Production I and learn advanced production skills including studio and remote producing, remote-location video shooting, digital editing, advanced special FX generation and switching, and set design via a "live on tape" production of an actual television program.
Prerequisites: MED-211
Corequisites: MED-210
Additional Fees: Course fee applies.
MED-213. Multimedia Authoring and Design. 3 Credits.
LECT 3 hrs.
Using industry-standard authoring software, students apply multimedia technology to assemble a real-world interactive multimedia project. Concepts and principles of user interface design, digital audio and video production, team production techniques and usability testing are employed. As members of a production team, students plan, manage and implement a complex multimedia production project to be used on DVD, a local network or the Internet for a participating business partner.
Prerequisites: MED-113
Additional Fees: Course fee applies.

MED-220. Animation. 3 Credits.
LECT 3 hrs.
This is an advanced production course utilizing 3D modeling and animation software to create animated imagery for video and multimedia applications. Software includes 3D Studio Max (3D animation) and Adobe Premiere and AfterEffects (digital video). Through assigned projects, students learn to combine live video and animation with compositing and bluescreening techniques.
Additional Fees: Course fee applies.

MED-224. Independent Study in Media. 3 Credits.
LECT 3 hrs.
Students, in consultation with a media advisor, undertake an in-depth analysis of a selected topic, problem or issue related to media or pursue additional media-related work experience. Students are responsible for developing a statement of goals, maintaining a weekly log and preparing a written and oral summary report. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-228. Cooperative Work Experience-Media Stud. 3 Credits.
COOP 3 hrs.
Actual applications of classroom learning in a supervised on-the-job training experience takes place daily. Students pursue their career objectives in the broadcasting arts or digital media area following a training plan with the assistance of the department chair and on-the-job supervisor. Interested students should consult with the Department of Information Technologies chair. Available only to Digital Media Technology majors.
Prerequisites: MED-212 or MED-213
Corequisites: MED-229.

MED-229. Cooperative Work Experience-Media Related Class. 1 Credit.
LECT 1 hr.
This course provides a variety of exercises that further develop students' technical skills, occupational adjustment and career development competencies. Exercises help to develop interpersonal and communication skills and help to ensure a positive cooperative work experience. This course is offered online. Available only Digital Media Technology majors.
Prerequisites: MED-212 or MED-213
Corequisites: MED-228.

MED-230. Media Internship. 3 Credits.
LECT 3 hrs.
Practical experience in the media career field is gained working part-time in an approved, supervised media-related environment or on an approved media-related project under the supervision of a media instructor and/or on-the-job supervisor. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair.

MED-240. Advanced Animation. 3 Credits.
LECT 3 hrs.
This advanced-level course is a continuation of MED-220 Animation and is designed to expose students to high-end 3-D modeling tools for digital animation, electronic post-production, digital special effects and digital multimedia. This course explores advanced applications in digital compositing, particle systems, Newtonian algorithms, kinematics, dynamics and 3-D characters.
Prerequisites: MED-220
Additional Fees: Course fee applies.

MED-291. Special Topics in Media. 1 Credit.
LECT 1 hr.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-292. Special Topics in Media. 3 Credits.
LECT 1 hr.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-293. Special Topics in Media. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

TEL-107. Computers and Data Networks. 3 Credits.
LECT 3 hrs.
This course is an introduction to the terminology and standard practices of data networking, including concepts of essential computer components, data storage, network operating systems, computer networking models and communication framework for the transmission of voice, text and video data. Coverage includes various transmission media as well as an understanding of networking fundamentals.
TEL-109. Introduction to Telecommunications. 3 Credits.
LECT 3 hrs.
This course is an introduction to the terminology and standard practices of the telecommunications industry, including concepts of integrating office automation procedures with telecommunications networks (wired and wireless) using voice, data, text and video information. Coverage includes various transmission and switching media as well as an understanding of message routing hierarchies. Issues of regulation and deregulation are discussed together with equipment selection and management topics. The mechanics of the Internet also are introduced with a description of Voice over Internet Protocol (VoIP). Other topics covered include laser communication links, teleconferencing, data network protocols and architectures and satellite technology.

TEL-110. Routing I (CISCO CCNA 1). 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The course follows CISCO’s CCNA1 curriculum for Networking Basics. Lecture and laboratory assignments are an integral part of the course. The course focuses on network terminology and protocols, local area networks (LANs), wide area networks (WANs), Open System Interconnection (OSI) networking model, cabling, cabling tools, routers, router programming, Ethernet, Internet Protocol addressing/subnetting and network standards. Additional Fees: Course fee applies.

TEL-120. Routing II (CISCO CCNA 2). 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The course follows CISCO’s CCNA2 curriculum for Routers and Routing Basics. The course focuses on initial router configuration, CISCO IOS software management, routing protocol configuration, TCP/IP and access control lists (ACLs). Through lectures and laboratory assignments, students develop the skills to configure and maintain a router as well as the creation of software firewalls. Prerequisites: TEL-110 Additional Fees: Course fee applies.

TEL-220. Routing III (CISCO CCNA3 and CCNA4). 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course follows CISCO’s CCNA3 curriculum for Switching and Intermediate Routing and CISCO’s CCNA4 curriculum for WAN Technologies. The first half of the course focuses on advanced IP addressing techniques (Variable Length Subnet Masking (VLSM)), intermediate routing protocols (RIP v2, single-area OSPF, EIGRP), command-line interface configuration of switches, Etherent switches, Virtual LANs (VLANs), Spanning Tree Protocol (STP) and VLAN Trunking Protocol (VTP). The second half of the course focuses on advances IP addressing techniques (Network Address Translation (NAT), Port Address Translation (PAT), and (DHCP), WAN terminology and technology, PPP, ISDN, DDR, Frame Relay, network management and an introduction to optical networking. Preparation is also given to the study of CISCO’s CCNA certification examination. Students learn through lecture and laboratory assignments. Prerequisites: TEL-120 Additional Fees: Course fee applies.

TEL-232. Data Communication. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of systems and equipment used in the transmission of data, interfacing data links to computers and troubleshooting of data links. Topics include VoIP (Voice over Internet Protocol), wireless technology, optical networking, serial interfaces, routing, link analysis, modems, data link and protocols, networking. The laboratory makes extensive use of protocol analysis for diagnostics. Prerequisites: ELT-209 or TEL-110 Additional Fees: Course fee applies.

TEL-233. Network Operating Systems. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to various network operating systems. Emphasis is placed on the study of a server in a client/server computer network. Topics of study include installation of a network operating system, securing a system, creating users and groups, partitioning of hard drive, installation of transport protocols, creating and maintaining printers, event viewing, performance monitoring, registry modification, configuring a server, creating and maintaining the active directory and troubleshooting the network. Additional Fees: Course fee applies.

TEL-234. Telecommunications Systems. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course includes the study of the elements of telecommunications systems, emphasizing both voice and digital communications. Telephone loop operation and signaling, central office interface, switching, routing, transmission protocols, network architecture, T1 multiplexing and high-speed transmission are major topics. Advanced telecommunication topics such as ISDN and DSL are studied. Laboratory includes configuration, maintenance and diagnostic telecommunication systems. Prerequisites: ELT-209 or CMP-230 and TEL-110 Additional Fees: Course fee applies.

TEL-239. Cooperative Work Experience - Telecommunications Systems Technology. 3 Credits.
COOP 3 hrs.
This course is a field experience in the laboratory facilities of an industrial firm. Designed for students in Telecommunication Systems Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Completion of the first year of the program is required to enroll. Prerequisites: Permission of department chair.

TEL-290. Independent Study in Telecommunications Systems Technology. 3 Credits.
LECT 3 hrs.
Students, in consultation with a Telecommunications Technology advisor, undertake an in-depth analysis of a selected topic, problem or issue related to the telecommunications industry or pursue additional related work experience. Students are responsible for developing a statement of goals and strategies, maintaining a weekly log and preparing a written and oral summary report. Written permission must be obtained from the department before registering for this course. Prerequisites: Permission of department chair.
TEL-291. Special Topics in Telecommunications Systems Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
These courses provide students with an examination of selected topics or issues in telecommunications systems technology. Topics may differ each time the course is offered. Students should consult a Telecommunications Technology advisor for additional information.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

TEL-292. Special Topics in Telecommunications Systems Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
These courses provide students with an examination of selected topics or issues in telecommunications systems technology. Topics may differ each time the course is offered. Students should consult a Telecommunications Technology advisor for additional information.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
Telecommunications Systems Technology

Associate in Applied Science Degree

The Telecommunications Systems Technology program is an interdisciplinary AAS degree designed to prepare students to enter the high-technology marketplace in telecommunications and management of networking systems. The field of telecommunications is undergoing tremendous change, spurred by the growth of sophisticated hardware, software and networking components such as VOIP (Voice over IP), wireless and optical technology. The challenge of integrating sophisticated technology into products, systems and services means that technical professionals must develop a solid foundation and experience in these areas. The County College of Morris (CCM) program prepares students for a telecommunications career starting with entry-level positions such as planning and monitoring network layouts and installations, analyzing and operating networks, and planning and operating telecommunications systems. Students have the option of participating in a cooperative work experience during their program.

Articulation Agreements

Established agreements provide students with the option of transferring to New Jersey Institute of Technology, DeVry University, SUNY Institute of Technology or Rochester Institute of Technology. Students should check with the Transfer Office about the latest articulation agreements with this program.

For more information, visit the Telecommunications Systems Technology (http://www.ccm.edu/academics/degrees/telecomsys.aspx) website.

Degrees

• AAS Telecommunications Systems Technology (p. 222)
• AAS Telecommunications Systems Technology - Networking Option (p. 222)

AAS Telecommunications Systems Technology

(P3650)

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Telecommunications Core

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<td>or CMP-230</td>
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<td>Technical Elective</td>
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<td>TEL-234</td>
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Networking

An Option within Telecommunications Systems Technology

(P3651)

The fast growth of the Internet and computer connectivity has created significant new opportunities. In recent years, the microcomputer network has become a critical component of the corporate computing environment. With such a rapid expansion of local area networks in offices and homes, there has been an increase in the demand for professionals who possess a broad understanding of local-area and wide-area technologies, such as VOIP (Voice over IP), wireless and optical technologies. Students gain the ability to integrate them into a seamless network. The Networking option of the Telecommunications Systems Technology program is designed to focus on market demands for entry-level network specialists in Local Area Networks, Wide Area Networks, wireless networks and especially in the area of network administration and routing.

Articulation Agreements

Established agreements provided students with the option of transferring to New Jersey Institute of Technology, DeVry University, SUNY Institute of Technology or Rochester Institute of Technology. Students should check with the Transfer Office about the latest articulation agreements with this program.

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### Certificates of Achievement

- **Basic Telecommunications Fundamentals** - A Certificate of Achievement within Telecommunications Systems Technology (p. 223)
- **Routing (CISCO CCNA)** - A Certificate of Achievement within Telecommunications Systems Technology (p. 223)
- **Systems Networking** - A Certificate of Achievement within Telecommunications Systems Technology (p. 223)

The Telecommunications Systems Technology Certificates of Achievement are designed for present or future professionals who seek to improve their technical knowledge and skills in these specialized areas. Each certificate is balanced with theory and hands-on experience.

The certificates are designed primarily for students who are presently working or plan to work in one of the following areas. It is possible to complete any certificate within one semester. The certificates also serve as an introduction to the field and can transfer completely to the Telecommunications Systems Technology degree programs. Some courses in the various certificates also prepare students to take outside certification examinations such as CCNA, Microsoft and CompTIA's Net+.

### Basic Telecommunications Fundamentals

**A Certificate of Achievement within Telecommunications Systems Technology**

(P0620)

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<td>ENR-119</td>
<td>Technical Computer Applications</td>
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### Routing (CISCO CCNA)

**A Certificate of Achievement within Telecommunications Systems Technology**

(P0622)

The Routing Certificate follows the four semester CISCO CCNA curriculum.

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**Total Credits** 10

### Systems Networking

**A Certificate of Achievement within Telecommunications Systems Technology**

(P0621)

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<td>Network Operating Systems</td>
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<td>CMP-124</td>
<td>Network Security</td>
<td>3</td>
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</table>

**Total Credits** 12

### Faculty

- **Jefferson Cartano**
  Instructor, Physics and Engineering
  M.S., Stanford University
  BSBE, University of Pennsylvania
  SH 273A 973-328-5762 jcartano@ccm.edu

- **Edward Osoliniec, P.E.**
  Associate Professor, Engineering Technologies
  MSEE, University of California Berkeley
  BSEE, New Jersey Institute of Technology
  SH 273A 973-328-5767 eosoliniec@ccm.edu

### Courses

**ELT-110. Digital Principles. 3 Credits.**

LECT 2 hrs., LAB 3 hrs.

This course develops the fundamentals of the binary system. Circuit implementation from Boolean functions and map minimization. Course includes study of combinational logic, sequential logic circuits, flip-flops, counters and shift register. The laboratory allows the student to apply theory to practical digital circuits.

**Additional Fees:** Course fee applies.
ELT-115. Active Circuit Components. 3 Credits.
LECT 2 hrs., LAB 4 hrs.
This course introduces the behavior of semiconductor electronic devices and develops the device characteristics. Some DC and AC circuit theory is expanded upon so that the active devices can be properly analyzed. Biasing techniques and models of amplifier configurations are stressed for the bipolar transistor and field effect devices. Diodes, rectifiers, filtering and switching circuit applications are studied. Laboratory includes the verification of device characteristics and the testing of basic amplifier and switching configurations.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ELT-121. Circuit Analysis. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course introduces the student to both DC and AC circuit theory. It includes Ohm's and Kirchhoff's laws for analysis of series and parallel circuits. Computer circuit simulation of series-parallel, ladder and bridge networks in both DC and AC are analyzed. Resonance and frequency response are included along with some discussion of AC power and transformers. The laboratory experiments are designed to support the theory and obtain measurement skills.
Prerequisites: MAT-110 and ENR-124
Additional Fees: Course fee applies.

ELT-123. Studio Maintenance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
For Music Recording majors only. This course provides students an introduction to music studio electronics. Basic skills of working with electronic components are covered, including soldering, the use of electronic measuring equipment and troubleshooting procedures. Studio cabling and infrastructure are dealt with extensively. Various wiring schemes and grounding techniques are examined to give the student an understanding of the typical music studio layout found in the professional environment. This course is for Music Recording majors only and does not serve as a technical elective for the Electronics Engineering Technology major. This course is offered in the Fall and Spring semesters.
Prerequisites: MUS-165
Additional Fees: Course fee applies.

ELT-200. Biomedical Electronics. 3 Credits.
LECT 3 hrs.
This course is the study of the techniques and theory behind the instrumentation utilized in hospital and health-related laboratory work. Emphasis is placed on physiological signals derived from the body and the problems and safety issues associated with their measurement. Demonstrations are conducted in class.
Prerequisites: ELT-115 and ELT-201.

ELT-201. Electricity and Electronics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is a fundamental study of electricity and electronics for Engineering Technology majors. The principles of electrical components and circuits are studied in class and laboratory. Topics include DC, AC series and parallel circuits, transformers and power supplies, solid state amplifiers and control components. The laboratory enables the student to apply the theory discussed in class and to gain some proficiency in the use of electronic measuring equipment.
Prerequisites: MAT-110 or equivalent and ENR-124
Additional Fees: Course fee applies.

ELT-209. Advanced Digital and Microprocessors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is an extension of digital theory into the operation and interfacing of microprocessors. Major topics include sequential logic design, memory organization, microprocessor architecture, machine level programming, A/D and D/A conversion, and serial and parallel interfacing. An associated laboratory provides for hands-on microprocessor interfacing and the use of logic analyzers.
Prerequisites: ELT-110 and ENR-120 or CMP-128
Additional Fees: Course fee applies.

ELT-210. Electronic Fabrication. 1 Credit.
LAB 3 hrs.
This course provides students with an opportunity to learn about the process involved in the fabrication of electronic circuit boards. Using computer-aided drafting tools, students create an electronic component layout and necessary art work for the construction of a printed circuit board. Students are introduced to project management concepts and techniques, soldering, test specifications and printed circuit board construction. A term project or a series of smaller projects enables students to manage, build and assemble a printed circuit board and develop test specifications.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ELT-213. Active Circuit Design. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers analysis and design of solid-state amplifiers using bipolar and field effect transistors. Topics include frequency response using Bode plots and feedback analysis as applied to operational amplifiers and oscillators. Laboratory verification includes transistors, amplifiers, power amplifiers, IC operational amplifiers and oscillators.
Prerequisites: ELT-115 and either ELT-121 or ELT-201
Additional Fees: Course fee applies.

ELT-215. Industrial Electronics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers operational amplifiers in linear, non-linear and active filter applications, pulse and wave-shaping techniques, power supplies and regulators, thyristor control of power and transducers. The laboratory includes experiments in design and tests to support the above topics.
Prerequisites: ELT-209 and ELT-115
Additional Fees: Course fee applies.

ELT-227. Biomedical Clinical Experience. 3 Credits.
LECT 3 hrs.
This course provides the student with a 200-hour internship at a local hospital. The student assists in the maintenance and calibration of biomedical electronic equipment. The student must abide by any rules and regulations stipulated in the affiliation agreement with the partnering hospital. As a minimum, the student is required to purchase liability insurance and agree to a criminal background check.
Prerequisites: ELT-200 and permission of department chair
Additional Fees: Course fee applies.
ELT-230. Optoelectronics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers principles of light and linear optics characteristics of electro-optical light sources and detectors and their applications in industry, displays and communication (fiber optics). Lab experiments demonstrate electro-optical measurements and designs of typical applications of electro-optical devices.
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ELT-231. Electronic Communication Systems. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers A.M., F.M., and single side-band communication systems, including an introduction to digital transmission. Designed to familiarize the student with transmitters, receivers, modems, noise analysis, information theory, pulse modulation, sampling, coding, multiplexing and other signal processing techniques used in commercial broadcasting and data transmission systems. The course includes some coverage of transmission lines, antennas, microwaves and satellites. Includes laboratory work involving communication system components and techniques using industrial grade equipment.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ELT-239. Cooperative Work Experience Electronics Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides a field experience in the laboratory facilities of an industrial firm. The course is designed for students in the Electronics Engineering Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Students must have completed 35 credits to enroll.
Prerequisites: Permission of department chair.

ELT-291. Special Topics in Electronics Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ELT-292. Special Topics in Electronic Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

TEL-107. Computers and Data Networks. 3 Credits.
LECT 3 hrs.
This course is an introduction to the terminology and standard practices of data networking, including concepts of essential computer components, data storage, network operating systems, computer networking models and communication framework for the transmission of voice, text and video data. Coverage includes various transmission media as well as an understanding of networking fundamentals.

TEL-109. Introduction to Telecommunications. 3 Credits.
LECT 3 hrs.
This course is an introduction to the terminology and standard practices of the telecommunications industry, including concepts of integrating office automation procedures with telecommunications networks (wired and wireless) using voice, data, text and video information. Coverage includes various transmission and switching media as well as an understanding of message routing hierarchies. Issues of regulation and deregulation are discussed together with equipment selection and management topics. The mechanics of the Internet also are introduced with a description of Voice over Internet Protocol (VoIP). Other topics covered include laser communication links, teleconferencing, data network protocols and architectures and satellite technology.

TEL-110. Routing I (CISCO CCNA 1). 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The course follows CISCO’s CCNA1 curriculum for Networking Basics. Lecture and laboratory assignments are an integral part of the course. The course focuses on network terminology and protocols, local area networks (LANs), wide area networks (WANs), Open System Interconnection (OSI) networking model, cabling, cabling tools, routers, router programming, Ethernet, Internet Protocol addressing/subnetting and network standards.
Additional Fees: Course fee applies.

TEL-120. Routing II (CISCO CCNA 2). 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The course follows CISCO’s CCNA2 curriculum for Routers and Routing Basics. The course focuses on initial router configuration, CISCO IOS software management, routing protocol configuration, TCP/IP and access control lists (ACLs). Through lectures and laboratory assignments, students develop the skills to configure and maintain a router as well as the creation of software firewalls.
Prerequisites: TEL-110
Additional Fees: Course fee applies.

TEL-220. Routing III (CISCO CCNA3 and CCNA4). 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course follows CISCO’s CCNA3 curriculum for Switching and Intermediate Routing and CISCO’s CCNA4 curriculum for WAN Technologies. The first half of the course focuses on advanced IP addressing techniques (Variable Length Subnet Masking (VLSM), intermediate routing protocols (RIP v2, single-area OSPF, EIGRP), command-line interface configuration of switches, Ethernet switches, Virtual LANs (VLANs), Spanning Tree Protocol (STP) and VLAN Trunking Protocol (VTP). The second half of the course focuses on advances IP addressing techniques (Network Address Translation (NAT), Port Address Translation (PAT), and (DHCP), WAN terminology and technology, PPP, ISDN, DRR, Frame Relay, network management and an introduction to optical networking. Preparation is also given to the study of CISCO’s CCNA certification examination. Students learn through lecture and laboratory assignments.
Prerequisites: TEL-120
Additional Fees: Course fee applies.
TEL-232. Data Communication. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of systems and equipment used in the transmission of data, interfacing data links to computers and troubleshooting of data links. Topics include Voice over Internet Protocol, wireless technology, optical networking, serial interfaces, routing, link analysis, modems, data link and protocols, networking. The laboratory makes extensive use of protocol analysis for diagnostics.
Prerequisites: ELT-209 or TEL-110
Additional Fees: Course fee applies.

TEL-233. Network Operating Systems. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to various network operating systems. Emphasis is placed on the study of a server in a client/server computer network. Topics of study include installation of a network operating system, securing a system, creating users and groups, partitioning of hard drive, installation of transport protocols, creating and maintaining printers, event viewing, performance monitoring, registry modification, configuring a server, creating and maintaining the active directory and troubleshooting the network.
Additional Fees: Course fee applies.

TEL-234. Telecommunications Systems. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course includes the study of the elements of telecommunications systems, emphasizing both voice and digital communications. Telephone loop operation and signaling, central office interface, switching, routing, transmission protocols, network architecture, T1 multiplexing and high-speed transmission are major topics. Advanced telecommunications topics such as ISDN and DSL are studied. Laboratory includes configuration, maintenance and diagnostic telecommunication systems.
Prerequisites: ELT-209 or CMP-230 and TEL-110
Additional Fees: Course fee applies.

TEL-239. Cooperative Work Experience - Telecommunications Systems Technology. 3 Credits.
COOP 3 hrs.
This course is a field experience in the laboratory facilities of an industrial firm. Designed for students in Telecommunication Systems Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Completion of the first year of the program is required to enroll.
Prerequisites: Permission of department chair.

TEL-290. Independent Study in Telecommunications Systems Technology. 3 Credits.
LECT 3 hrs.
Students, in consultation with a Telecommunications Technology advisor, undertake an in-depth analysis of a selected topic, problem or issue related to the telecommunications industry or pursue additional related work experience. Students are responsible for developing a statement of goals and strategies, maintaining a weekly log and preparing a written and oral summary report. Written permission must be obtained from the department before registering for this course.
Prerequisites: Permission of department chair.

TEL-291. Special Topics in Telecommunications Systems Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
These courses provide students with an examination of selected topics or issues in telecommunications systems technology. Topics may differ each time the course is offered. Students should consult a Telecommunications Technology advisor for additional information.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

TEL-292. Special Topics in Telecommunications Systems Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
These courses provide students with an examination of selected topics or issues in telecommunications systems technology. Topics may differ each time the course is offered. Students should consult a Telecommunications Technology advisor for additional information.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
Visual Arts - Fine Arts

Associate in Fine Art Degree

The Associate in Fine Arts (AFA) degree focuses on developing an understanding of the specific arts disciplines of dance, drama or visual arts through the intensive study of technique, history, theory and hands-on approaches in studio work and/or performance.

The AFA degree is designed to provide students with the competencies necessary to achieve seamless articulation into a Bachelor of Fine Arts program. The program focuses on intensive technical training and artistic development, with emphasis on one of three major areas of concentration: dance, drama or visual arts.

Articulation Agreements

Students should check with the Transfer Office about articulation agreements with this program.

Degrees

AFA Visual Arts
An Option within Fine Arts

(P4140)

The A.F.A. Visual Arts option offers students a solid foundation for advanced study in the areas of Studio Art (Drawing, Painting, Sculpture, Ceramics), Art Education, Art History and Art Therapy. Students may take studio electives in a variety of media. The Visual Arts curriculum is designed for transfer into B.F.A. and B.A. degree programs in Fine Arts, Art Education, Art Therapy, Art History, Photography, Design and Graphic Design at four-year colleges, universities, schools of design and institutes of art.

If you are considering a career in teaching, please read about the Teacher Education Specialization in Visual Arts at CCM.

General Education Foundation

Communication 6
- ENG-111 English Composition I
- ENG-112 English Composition II

Math-Science-Technology 7-9
- Choose from General Education course list
- Mathematics Elective (3/4 CR)
- Laboratory Science Elective (4 CR)
- Technology (0/1 CR)

Social Science 3
- PSY-113 General Psychology
- or SOC-120 Principles of Sociology

General Education Courses 9
- ART-133 Art History I
- ART-134 Art History II
- COM-109 Speech Fundamentals

General Education Foundation Credits 25-27

Visual Arts Core

ART-122 Drawing I 3
ART-123 Drawing II 3

Total Credits 61-63

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Additional Fees: Course fee applies.

Art Start is designed to introduce the novice, the absolute beginning student, to a basic history of art, the tools and techniques used to make art, and the simple pleasure and experience of working with a variety of materials to create expressive art objects. No talent or prior experience is required. Instruction emphasizes process over product and hands-on experience as an avenue to understanding art theory and philosophy. Art Start experiences include collage, assemblage, drawing, watercolor painting, acrylic painting, printmaking and clay sculpture. This course is aerobics for the brain and soul food for the creative artist hiding within every person.

**Additional Fees:** Course fee applies.

**ART-101. Art Start - a Creative Experience. 3 Credits.**
LECT 1 hr., LAB 3 hrs.

**ART-114. Contemporary Art. 3 Credits.**
LECT 3 hrs.
Contemporary Art launches with a review of 19th and 20th century art and then brings students to the here and now, the art and the artists of today. In lectures, multimedia presentations and field experiences, students are exposed to the pluralism of the new global art world.

**Prerequisites:** ENG-025.

**ART-116. American Art. 3 Credits.**
LECT 3 hrs.
A survey and overview of the development of visual art traditions in America beginning with the colonization of the Americas and continuing through the Modern and Post-Modern periods. Arts, crafts and architecture are examined as well as Native American, African American, Hispanic and other cultural influences contributing to the development of a uniquely American experience and vision.

**Prerequisites:** ENG-025.

**ART-122. Drawing I. 3 Credits.**
LECT 2 hrs., LAB 3 hrs.

In Drawing I, beginning art students learn the methods, materials and visual information needed to draw what we see. In small steps, students are led through a series of simple exercises designed to build competence and confidence. The diversity and complexity of the subjects drawn gradually grows along with students’ drawing and visual skills. Students create a sketch book and a portfolio including still life drawings, landscape drawings, perspective drawings and portraiture. Materials used include pencil, charcoal, conte crayon and ink.

**Additional Fees:** Course fee applies.

**ART-123. Drawing II. 3 Credits.**
LECT 2 hrs., LAB 3 hrs.

Drawing II is an intermediate-level drawing course designed for students who wish to build upon the skills and knowledge acquired in ART-122 Drawing I. Students explore a wide range of tools, mediums and surfaces. Larger scale drawings, the introduction of color in drawings and experimentation with subjects and visual space are encouraged. Drawing II also includes a study of basic anatomy for artists and an introduction to drawing from live nude models, both male and female. By semester’s end, successful students will have created a sketch book and diverse portfolio of competent and expressive drawings that complement the portfolio begun in ART-122 Drawing I.

**Prerequisites:** ART-122

**Additional Fees:** Course fee applies.

**ART-124. Figure Drawing. 3 Credits.**
LECT 2 hrs., LAB 3 hrs.

In Figure Drawing, student artists draw from live nude models, both male and female, study in-depth anatomy for artists and explore a variety of methods and materials to create expressive drawings of the human figure. By the end of the semester, successful students will have created a wide selection of figure drawings to support the drawing portfolio begun in Drawing I and continued in Drawing II.

**Prerequisites:** ART-122, ART-123

**Additional Fees:** Course fee applies.

**ART-130. Two Dimensional Design. 3 Credits.**
LECT 2 hrs., LAB 3 hrs.
In Two Dimensional Design, students learn, through lectures, multimedia presentations, and simple drawing, painting and collage projects, how to control and compose visual forces on a two-dimensional plane. These visual forces include line, shape, light, texture, scale and an introduction to color put to use on two-dimensional surfaces such as paper, board, canvas and walls. Student artists who successfully complete this course will have a solid initial portfolio and the fundamental knowledge and basic skills needed to create better, more effective photographs, drawings, painting prints, illustrations, designs and graphic designs.

**Additional Fees:** Course fee applies.

**ART-131. Color Theory. 3 Credits.**
LECT 2 hrs., LAB 3 hrs.

In Color Theory, students learn, through lectures, multimedia presentations and assigned projects using a variety of art mediums, how color affects the human eye, mind, body and spirit. Student artists who successfully complete this course will add a strong body of project art that exhibits a working knowledge of color theory and its application in the visual arts, to the initial portfolio of artwork created in Drawing I and Two Dimensional Design.

**Prerequisites:** ART-122, ART-130

**Additional Fees:** Course fee applies.

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ART-122. Three Dimensional Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
In Three Dimensional Design, students, through lectures, multimedia presentations and assigned projects using a variety of materials and the basic aspects of planning, sketching and modeling, learn to understand and control the visual and physical forces inherent in the creation of three-dimensional objects. Students who successfully complete this course will add a body of three-dimensional art work to their portfolios. Student artists will also possess the fundamental knowledge and basic skills needed to pursue further studies in sculpture, ceramics, design (product, industrial, interior, fashion) and architecture.
Prerequisites: ART-122, ART-130
Additional Fees: Course fee applies.

ART-132. Three Dimensional Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
ART-133. Art History I. 3 Credits.
LECT 3 hrs.
Art History I is a global survey of the major developments in painting, sculpture and architecture from the cave art of prehistory through the Renaissance in Europe. Students explore, via lectures, multimedia presentations and a special field experience at a major art museum, the social, technological and cultural changes that influenced the evolution of subjects, styles and ideas expressed in early art.

ART-134. Art History II. 3 Credits.
LECT 3 hrs.
Art History II explores the significant developments in painting, sculpture and architecture from the High Renaissance to the art of the late 20th century. Political, religious, scientific, industrial and technological revolutions are mirrored in the powerful and dramatic changes that take place in the art world. Through lecture, visual presentations and a field experience, students discover important stylistic movements of the last half-millennium from around the world.

ART-219. Painting I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Painting I introduces students to the technical, formal and creative aspects of painting in either oil or acrylic paint. Student artists work with diverse subject matter and explore a variety of methods, tools and materials.
Prerequisites: ART-122, ART-130, ART-131
Additional Fees: Course fee applies.

ART-220. Painting II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Painting II advances students in the technical, formal and creative aspects of painting in either oil or acrylic paint. Student artists work with diverse subject matter and explore a variety of methods, tools and materials.
Prerequisites: ART-122, ART-130, ART-131, ART-219
Additional Fees: Course fee applies.

ART-223. Printmaking I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Printmaking I introduces students to the historical, technical, formal and creative aspects of printmaking. Student artists work with new nontoxic water-based materials in an exploration of printing methods such as monotypes, relief prints, silk-screens and photo silk-screens.
Prerequisites: ART-122, ART-130.

ART-224. Printmaking II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Printmaking II is a continuation of Printmaking I with greater emphasis on color, originality, personal style and self-expression. Student artists are challenged to create a connected body of prints or an artist’s book.
Prerequisites: ART-122, ART-130, ART-131, ART-223.

ART-228. Sculpture I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Sculpture I builds on the basic skills acquired in prerequisite courses and Sculpture I. Sculpture II is an extension of Sculpture I with a greater emphasis on originality and personal style and self-expression. Student artists continue to develop their understanding of the human figure, form and of the media and techniques by which to represent them.
Prerequisites: ART-122, ART-123, ART-130, ART-132, ART-228
Additional Fees: Course fee applies.

ART-230. Portfolio and Presentation. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Portfolio and Presentation guides students in the selection of artworks appropriate to include in final portfolios. Students improve, restore, repair or complete any work necessary to the portfolio. Students assemble, collate and document all work in physical and digital forms in preparation for submission to targeted transfer institutions, galleries, museums or prospective employers or clients. Students create written documents including resumes, cover letters and biographies to support professional activities. A final art exhibition and the formal presentation of the portfolio and the supporting materials are required.
Prerequisites: ART-122, ART-130, ART-131 and ART-132
Additional Fees: Course fee applies.

ART-233. Independent Study I. 1-3 Credits.
LECT 3 hrs.
A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives, maintaining a weekly log and submitting a summary project.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

ART-234. Independent Study II. 1-3 Credits.
LECT 3 hrs.
A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives, maintaining a weekly log and submitting a summary project.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
ART-237. Watercolor Painting. 3 Credits.
LECT 1 hr., LAB 4 hrs.
In this course, students learn, through demonstration and experience, how to paint using the medium of watercolor. Students create still life, landscape, figurative and abstract paintings. Student artists who successfully complete this course will possess a beginning portfolio of watercolor paintings and the fundamental knowledge and basic skills needed to effectively use the medium.

ART-241. Ceramics I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The study and practice of ceramics - the preparation of clay, hand building, wheel-throwing and glazing. Emphasis is placed on contemporary American techniques.
Additional Fees: Course fee applies.

ART-242. Ceramics II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The study and practice of ceramics. Emphasis is placed on producing finished pottery.
Prerequisites: ART-241
Additional Fees: Course fee applies.

ART-291. Special Topics in Art. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Studio work in selected topics or issues in art.
Additional Fees: Course fee applies.

ART-292. Special Topics in Art as an Art Form. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Studio work in selected topics or issues in art.
Additional Fees: Course fee applies.

PHO-110. Photography Appreciation. 3 Credits.
LECT 3 hrs.
Through lectures, discussions, written analysis, projects and presentations, the student will gain an understanding and appreciation of the global and cultural impact of photography. Students focus on the formal development of photography and the role it plays in social and cultural production, gaining insight into how photographs produce visual representations across cultures and reflect social values. Students learn the fundamental visual elements of photographic form, critical skills necessary to interpret a variety of visual representations and enhancing visual literacy. Note: This is a lecture based course, not a studio art course and is not acceptable for majors of Photography, Graphic Design, or Visual Arts.

PHO-111. Introduction to Photography. 3 Credits.
LECT 3 hrs.
Through lectures, discussions, written analysis, projects and presentations, students gain an understanding and appreciation of the global and cultural impact of photography. Students focus on the formal development of photography and the role it plays in social and cultural production, gaining insight into how photographs produce visual representations across cultures and reflect social values. Students learn the fundamental visual elements of photographic form, critical skills necessary to interpret a variety of visual representations and enhancing visual literacy. This is a lecture based course, not a studio art course and is not acceptable for majors of Photography, Graphic Design, or Visual Arts.

PHO-112. Equipment, Materials and Processes. 3 Credits.
LECT 3 hrs.
A non-studio technology course covering digital photographic processes. The range of topics for this course include data asset management, professional workflow, color management and basic scientific principles regarding optics, the physics of light, camera design and reproduction problems. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115 and MAT-011.

PHO-113. History of Photography. 3 Credits.
LECT 3 hrs.
A survey of photographic history from its origin to the present day. Topics include the invention of photographic, the photograph as document, the photograph as art, the natural landscape, the portrait, color photography and contemporary photography. Course requirements may include extensive use of Blackboard and other online components.
Prerequisites: ENG-025 or ENG-022 or ENG-007.

PHO-115. Photography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A beginning photography studio course emphasizing the fundamentals of photographic language, digital camera systems and creative visual problem solving. Students become familiar with the concept of the digital darkroom using image editing photographic production tools. Course requirements may include extensive use of Blackboard and other online components, including, but not limited to, photo sharing sites. The current software program used in this course is Adobe Lightroom, which is subject to change based on technology advancement and availability. Note: Each semester there will be a section of PHO-115 designated for Photography Technology majors which will require that students own or have unrestricted access to a DSLR (35mm digital camera). No point and shoot cameras are allowed in this course section.
Additional Fees: Course fee applies.

PHO-116. Photography II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An intermediate black and white photography course introducing the student to medium and large format camera systems in both commercial and fine art applications. Darkroom and digital technologies are covered in this course.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-117. Color Photography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introduction to color photographic materials. Topics include color perception, color theory, conventional image processing and digital image processing are covered. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115
Additional Fees: Course fee applies.
PHO-118. Color Photography II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An advanced studio course in color photographic theory. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-117
Additional Fees: Course fee applies.

PHO-119. Contemporary Photography. 3 Credits.
LECT 3 hrs.
An in-depth look at photography and photographers practicing since 1950. Students gain an understanding of the philosophies that have shaped the current uses of the photographic image. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.

PHO-204. Digital Imaging I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introductory studio course providing an overview of various digital post production software applications used for digital photography. Non-destructive vs. destructive image manipulation, color management, workflow and image composing basics are several of the topics covered in this course. Current software applications employed in the course include Adobe Photoshop and Adobe Lightroom. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-213. Documentary Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introduction to the methods, history, problems and opportunities of in-depth, fact-based photographic assignments and essays. Students learn how to plan, engage and complete in-depth documentary and journalistic photographic projects. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-215. Large Format Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Note: Students will be required to purchase an appropriate light meter. The operation and basic technical mastery of the professional large format camera with an introduction to studio lighting. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-216. Studio Lighting I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introductory studio course covering the basic concepts and manipulation of artificial lighting for a range of subject matter, camera formats and applications. The course focuses on developing problem-solving skills that address technical and creative methods of crafting an image to achieve a desired goal. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115 and PHO-204
Additional Fees: Course fee applies.

PHO-224. Digital Imaging II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This studio course is designed for experienced digital imaging users. Focusing on a semester long project, students learn how different media influence the way we see and capture the world. As technology and the role of the photographer evolve, methods of manipulation and presentation are explored. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-204
Additional Fees: Course fee applies.

PHO-226. Portfolio Preparation. 3 Credits.
LECT 3 hrs.
Students prepare a final portfolio, in both print and digital formats, showcasing examples of photographic skills acquired during their course of study in the Photography Technology program. Students focus on presentation, craftsmanship and the development of a personal style. Various outlets and methods of presentation are explored. Formal and informal critiques help students define strengths and career goals. This course should be taken in the student’s final semester. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-216
Corequisites: PHO-227
Additional Fees: Course fee applies.

PHO-227. Professional Studio Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An advanced studio course focusing on the development of concepts and ideas within a studio environment through a variety of assignments. Emphasis is placed on developing light design strategies for various applications ranging from portraiture to architecture. Technical competency and professionalism are key components of this course. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-204 and PHO-216
Additional Fees: Course fee applies.

PHO-228. Cooperative Work Experience-Photography. 3 Credits.
COOP 3 hrs.
Open to Photography Technology (3550) majors only. Students work in photography-related jobs, receiving training. Photography Technology faculty members individually supervise students.
Prerequisites: PHO-116
Corequisites: PHO-229.

PHO-229. Cooperative Work Experience-Photography Related Class. 1 Credit.
LECT 1 hr.
Open to Photography Technology (Program 3550) majors only. Related class designed to supplement Cooperative Work Experience. Weekly meetings include discussion, written assignments and critical analysis of the work experience.
Prerequisites: PHO-116
Corequisites: PHO-228.
PHO-290. Independent Study I in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives and submitting a summary project.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

PHO-291. Special Topics in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Topics in photography which are not included in the regularly scheduled curriculum. May include studio work, technical topics and/or critique.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-292. Special Topics in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Studio work in selected topics or issues in photography.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-293. Special Topics in Photography. 1 Credit.
LECT 3 hrs.
Studio work in selected topics or issues in photography.
Prerequisites: PHO-115
Additional Fees: Course fee applies.
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- Arabic (ARA) (p. 235)
- Art (ART) (p. 235)
- Aviation Flight Technology (AVT) (p. 237)
- Biology (BIO) (p. 239)
- Business (BUS) (p. 242)
- Chemistry (CHM) (p. 244)
- Chinese (CHI) (p. 246)
- College Student Success (CSS) (p. 247)
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Accounting (ACC)

Courses

ACC-110. Elements of Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
For career option students or transfer students, register by advisement only. This is an introductory accounting course that focuses on accounting for small businesses. Emphasis is placed on recordkeeping from basic journalizing to year-end closing and financial statement preparation. Additionally, the course covers payroll and taxation issues related to small business operations.
**Prerequisites:** MAT-014 or MAT-050 or equivalent
**Corequisites:** MAT-014 or MAT-050 or equivalent
**Additional Fees:** Course fee applies.

ACC-111. Principles of Accounting I - Financial Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
Financial accounting is a service activity that functions to collect and communicate useful financial information about economic entities. The course covers processing accounting information assets and liabilities, accounting theory for proprietorships, corporations and financial statement analysis.
**Prerequisites:** MAT-016 or equivalent
**Additional Fees:** Course fee applies.

ACC-112. Principles of Accounting II - Managerial Accounting. 3 Credits.
LECT 3 hrs., LAB 1 hr.
A segment of accounting that deals specifically with how accounting data and other financial information can be used in the management of business, governmental or not-for-profit entities. The course is specifically designed to assist internal management and deals with cost-volume-profit analysis, cost systems, budgeting and performance evaluation for goal congruence and statement analysis designed for future managers.
**Prerequisites:** ACC-111
**Additional Fees:** Course fee applies.
ACC-211. Intermediate Accounting I. 3 Credits.
LECT 3 hrs.
A study of the complex aspect of financial accounting and reporting for persons outside the firm. Expanded treatment of generally accepted accounting principles (GAAP) underlying the preparation of financial statements and of cash and temporary investments, receivables, present value concepts, cash flow valuations of assets and inventories, methods of estimating the inventory depreciation and depletion.
Prerequisites: ACC-112.

ACC-212. Intermediate Accounting II. 3 Credits.
LECT 3 hrs.
The complex aspects of a study of financial accounting and reporting for persons outside the firm. Expanded treatment of generally accepted accounting principles (GAAP) as they relate to long-term investments, liabilities (both current and long-term), leases, pensions, income taxes, earnings per share, financial statement analysis and other miscellaneous topics.
Prerequisites: ACC-211.

ACC-213. Tax Procedures. 3 Credits.
LECT 3 hrs.
A study of the Internal Revenue Code and application of accounting principles for preparation of individual income tax returns. Limited business application.
Prerequisites: ACC-111.

ACC-215. Cost Accounting. 3 Credits.
LECT 3 hrs.
The basic procedures and techniques of accounting for the production and distribution of goods and services in today's economy. Process and job-order methods, standards and standard costs, techniques of cost analysis and control.
Prerequisites: ACC-112.

ACC-230. Principles of Auditing. 3 Credits.
LECT 3 hrs.
The course integrates the most important concepts of auditing as well as certain practical aspects in a logical manner to assist students in understanding audit decision making and evidence accumulation. Coverage includes, but is not limited to, concepts of evidence accumulation; analytical procedures as audit tools; probability and risk and their effect on the audit; application of the auditing process to the sales and collection cycle and other cycles; audit reports and requirements for completion of the audit cycle.
Prerequisites: ACC-212.

ACC-231. Government and Not-For-Profit Accounting. 3 Credits.
LECT 3 hrs.
This course involves financial analysis and reporting for government and not-for-profit organizations, including concepts, standards, and procedures designed to accommodate the uniqueness of the not-for-profit environment. The course deals specifically with financial accounting and reporting aspects applicable to state and local governments and other special districts and public authorities; and the federal government agencies, universities and hospitals.
Prerequisites: ACC-212.

ACC-291. Special Topics in Accounting. 3 Credits.
LECT 3 hrs.
This course offers students an opportunity to explore special topics or issues in Accounting. Topics may differ each time the course is offered and may include areas of negotiation or conflict resolution.

ACC-292. Special Topics in Accounting. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in accounting. Topics may differ each time the course is offered. Students should consult the department chairperson for further information.

American Sign Language (ASL)

Courses

ASL-111. American Sign Language I. 3 Credits.
LECT 3 hrs.
This course is an introduction to the expressive and receptive skills required for communication in American Sign Language (ASL). Through active class use of basic vocabulary, grammar and syntax, students begin the exploration of Deaf culture and begin to learn the language of that culture. This course is not intended for students with more than one year of previous study of this language at the high school level.

ASL-112. American Sign Language II. 3 Credits.
LECT 3 hrs.
This course is a continuation to the basic expressive and receptive skills required for communication in American Sign Language (ASL). Through active class use of basic vocabulary, grammar and syntax, students begin the exploration of Deaf culture and begin to learn the language of that culture. Students will be better informed about the appropriate course of action when encountering or assisting deaf individuals in our community. Students are expected to search the Internet to watch, evaluate and gather information from different modalities of ASL conversation. This course is not intended for students with more than two years of previous study of this language.

ASL-111 or permission of department chair.

ASL-111. American Sign Language I. 3 Credits.
LECT 3 hrs.
This course is an introduction to the expressive and receptive skills required for communication in American Sign Language (ASL). Through active class use of basic vocabulary, grammar and syntax, students begin the exploration of Deaf culture and begin to learn the language of that culture. Students will be better informed about the appropriate course of action when encountering or assisting deaf individuals in our community. Students are expected to search the Internet to watch, evaluate and gather information from different modalities of ASL conversation. This course is not intended for students with more than one year of previous study of this language at the high school level.

ASL-112. American Sign Language II. 3 Credits.
LECT 3 hrs.
This course is a continuation to the basic expressive and receptive skills required for communication in American Sign Language (ASL). Through active class use of basic vocabulary, grammar and syntax, students begin the exploration of Deaf culture and begin to learn the language of that culture. Students will be better informed about the appropriate course of action when encountering or assisting deaf individuals in our community. Students are expected to search the Internet to watch, evaluate and gather information from different modalities of ASL conversation. This course is not intended for students with more than two years of previous study of this language.

Prerequisites: ASL-111 or permission of department chair.

ASL-211. Intermediate American Sign Language I. 3 Credits.
LECT 3 hrs.
Intermediate American Sign Language I expands the students' vocabulary and enhances their expressive and receptive skills through class discussions, pair/group work, simulations and presentations. The course is conducted mostly in American Sign Language. It also features extensive discussions of Deaf culture and requires students to write a paper on one of the topics discussed including ethical issues as accommodations and inclusion/exclusion in mainstream society. Students are expected to conduct research not only for this paper, but also for their final presentation. This course is not intended for students with three or more years of previous study of this language.

Prerequisites: ASL-112.
ASL-212. Intermediate American Sign Language II. 3 Credits.
LECT 3 hrs.
Intermediate American Sign Language II further expands the students’ vocabulary and enhances their expressive and receptive skills through class discussions, pair/group work, simulations, and presentations. This course is intended to build upon students’ knowledge of the rules of ASL, including discourse markers, personal narratives, dynamic equivalencies, non-manual grammar, syntax, classifiers, temporalization, pronominalization, turn-taking, use of space, sentence structure and types, and gesture. This course will also include lessons on Deaf culture, history, and literature. The course is conducted mostly in American Sign Language. It also features extensive discussions of Deaf culture and requires students to research on-line and write a paper on one of the topics discussed including accommodations, and inclusion/exclusion in mainstream society. Students are also expected to conduct research for their final presentation. This course is not recommended for students with four or more years of previous study of this language.
Prerequisites: ASL-211.

Arabic (ARA)

Courses

ARA-111. Elementary Arabic I. 3 Credits.
LECT 3 hrs.
This course is designed for students with little or no prior knowledge of Arabic. Coursework combines the use of a textbook and other relevant and authentic materials for writing, reading, speaking and listening comprehension. By the end of the course, students are expected to master the writing and sound systems of Arabic, understand and use basic grammatical structures, have use of basic vocabulary words, comprehend short reading passages and understand simple utterances. Not intended for native speakers.

ARA-112. Elementary Arabic II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Arabic expand their study of basic Arabic script, pronunciation,vocabulary and grammar of an elementary nature. Grammar study includes root consonants and word shapes, word order and agreement, plural and agreement of adjectives, dual nouns, pronouns, verbs and adjectives, and the past tense. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Arabic language proficiency. The cultural context of the language is also covered.
Prerequisites: ARA-111 or permission of department chair.

ARA-211. Intermediate Arabic I. 3 Credits.
LECT 3 hrs.
This course briefly reviews the grammar covered in Elementary Arabic II. It expands the Arabic vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Arabic language.
Prerequisites: ARA-112 or permission of department chair.

Art (ART)

Courses

ART-101. Art Start - a Creative Experience. 3 Credits.
LECT 1 hr., LAB 3 hrs.
Art Start is designed to introduce the novice, the absolute beginning student, to a basic history of art, the tools and techniques used to make art, and the simple pleasure and experience of working with a variety of materials to create expressive art objects. No talent or prior experience is required. Instruction emphasizes process over product and hands-on experience as an avenue to understanding art theory and philosophy. Art Start experiences include collage, assemblage, drawing, watercolor painting, acrylic painting, printmaking and clay sculpture. This course is aerobic for the brain and soul food for the creative artist hiding within every person.
Additional Fees: Course fee applies.

ART-114. Contemporary Art. 3 Credits.
LECT 3 hrs.
Contemporary Art launches with a review of 19th and 20th century art and then brings students to the here and now, the art and the artists of today. In lectures, multimedia presentations and field experiences, students are exposed to the pluralism of the new global art world.
Prerequisites: ENG-025.

ART-122. Drawing I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
In Drawing I, beginning art students learn the methods, materials and visual information needed to draw what we see. In small steps, students are led through a series of simple exercises designed to build competence and confidence. The diversity and complexity of the subjects drawn gradually grows along with students’ drawing and visual skills. Students create a sketch book and a portfolio including still life drawings, landscape drawings, perspective drawings and portraiture. Materials used include pencil, charcoal, conte crayon and ink.
Additional Fees: Course fee applies.

ART-123. Drawing II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Drawing II is an intermediate-level drawing course designed for students who wish to build upon the skills and knowledge acquired in ART-122 Drawing I. Students explore a wide range of tools, mediums and surfaces. Larger scale drawings, the introduction of color in drawings and experimentation with subjects and visual space are encouraged. Drawing II also includes a study of basic anatomy for artists and an introduction to drawing from live nude models, both male and female. By semester’s end, successful students will have created a sketch book and diverse portfolio of competent and expressive drawings that complement the portfolio begun in ART-122 Drawing I.
Prerequisites: ART-122
Additional Fees: Course fee applies.
ART-124. Figure Drawing. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
In Figure Drawing, student artists draw from live nude models, both male and female, study in-depth anatomy for artists and explore a variety of methods and materials to create expressive drawings of the human figure. By the end of the semester, successful students will have created a wide selection of figure drawings to support the drawing portfolio begun in Drawing I and continued in Drawing II.
Prerequisites: ART-122, ART-123
Additional Fees: Course fee applies.

ART-130. Two Dimensional Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
In Two Dimensional Design, students learn, through lectures, multimedia presentations, and simple drawing, painting and collage projects, how to control and compose visual forces on a two-dimensional plane. These visual forces include line, shape, light, texture, scale and an introduction to color put to use on two-dimensional surfaces such as paper, board, canvas and walls. Student artists who successfully complete this course will have a solid initial portfolio and the fundamental knowledge and basic skills needed to create better, more effective photographs, drawings, painting prints, illustrations, designs and graphic designs.
Additional Fees: Course fee applies.

ART-131. Color Theory. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
In Color Theory, students learn, through lectures, multimedia presentations and assigned projects using a variety of art mediums, how color affects the human eye, mind, body and spirit. Student artists who successfully complete this course will add a strong body of project art that exhibits a working knowledge of color theory and its application in the visual arts, to the initial portfolio of artwork created in Drawing I and Two Dimensional Design.
Prerequisites: ART-122, ART-130
Additional Fees: Course fee applies.

ART-132. Three Dimensional Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
In Three Dimensional Design, students, through lectures, multimedia presentations and assigned projects using a variety of materials and the basic aspects of planning, sketching and modeling, learn to understand and control the visual and physical forces inherent in the creation of three-dimensional objects. Students who successfully complete this course will add a body of three-dimensional art work to their portfolios. Student artists will also possess the fundamental knowledge and basic skills needed to pursue further studies in sculpture, ceramics, design (product, industrial, interior, fashion) and architecture.
Prerequisites: ART-122, ART-130
Additional Fees: Course fee applies.

ART-133. Art History I. 3 Credits.
LECT 3 hrs.
Art History I is a global survey of the major developments in painting, sculpture and architecture from the cave art of prehistory through the Renaissance in Europe. Students explore, via lectures, multimedia presentations and a special field experience at a major art museum, the social, technological and cultural changes that influenced the evolution of subjects, styles and ideas expressed in early art.

ART-134. Art History II. 3 Credits.
LECT 3 hrs.
Art History II explores the significant developments in painting, sculpture and architecture from the High Renaissance to the art of the late 20th century. Political, religious, scientific, industrial and technological revolutions are mirrored in the powerful and dramatic changes that take place in the art world. Through lecture, visual presentations and a field experience, students discover important stylistic movements of the last half-millennium from around the world.

ART-219. Painting I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Painting I introduces students to the technical, formal and creative aspects of painting in either oil or acrylic paint. Student artists work with diverse subject matter and explore a variety of methods, tools and materials.
Prerequisites: ART-122, ART-130, ART-131
Additional Fees: Course fee applies.

ART-220. Painting II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Painting II advances students in the technical, formal and creative aspects of painting in either oil or acrylic paint. Student artists work with diverse subject matter and explore a variety of methods, tools and materials.
Prerequisites: ART-122, ART-130, ART-131, ART-219
Additional Fees: Course fee applies.

ART-223. Printmaking I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Printmaking I introduces students to the historical, technical, formal and creative aspects of printmaking. Student artists work with new nontoxic water-based materials in an exploration of printing methods such as monotypes, relief prints, silk-screens and photo silk-screens.
Prerequisites: ART-122, ART-130.

ART-224. Printmaking II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Printmaking II is a continuation of Printmaking I with greater emphasis on color, originality, personal style and self-expression. Student artists are challenged to create a connected body of prints or an artist's book.
Prerequisites: ART-122, ART-130, ART-131, ART-223.

ART-228. Sculpture I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
In Sculpture I, students explore space and form, and three-dimensional media in the creation of expressive sculptural objects. Student artists model, carve and construct in a variety of media such as clay, plaster, stone, wood, metal and paper.
Prerequisites: ART-122, ART-123, ART-130, ART-131, ART-132
Additional Fees: Course fee applies.

ART-229. Sculpture II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Sculpture II builds on the basic skills acquired in prerequisite courses and Sculpture I. Sculpture II is an extension of Sculpture I with a greater emphasis on originality and personal style and self-expression. Student artists continue to develop their understanding of the human figure, form and of the media and techniques by which to represent them.
Prerequisites: ART-122, ART-123, ART-130, ART-132, ART-228
Additional Fees: Course fee applies.
ART-230. Portfolio and Presentation. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Portfolio and Presentation guides students in the selection of artworks appropriate to include in final portfolios. Students improve, restore, repair or complete any work necessary to the portfolio. Students assemble, collate and document all work in physical and digital forms in preparation for submission to targeted transfer institutions, galleries, museums or prospective employers or clients. Students create written documents including resumes, cover letters and biographies to support professional activities. A final art exhibition and the formal presentation of the portfolio and the supporting materials are required.
Prerequisites: ART-122, ART-130, ART-131 and ART-132
Additional Fees: Course fee applies.

ART-233. Independent Study I. 1-3 Credits.
LECT 3 hrs.
A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives, maintaining a weekly log and submitting a summary project.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

ART-234. Independent Study II. 1-3 Credits.
LECT 3 hrs.
A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives, maintaining a weekly log and submitting a summary project.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

ART-237. Watercolor Painting. 3 Credits.
LECT 1 hr., LAB 4 hrs.
In this course, students learn, through demonstration and experience, how to paint using the medium of watercolor. Students create still life, landscape, figurative and abstract paintings. Student artists who successfully complete this course will possess a beginning portfolio of watercolor paintings and the fundamental knowledge and basic skills needed to effectively use the medium.

ART-241. Ceramics I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The study and practice of ceramics - the preparation of clay, hand building, wheel-throwing and glazing. Emphasis is placed on contemporary American techniques.
Additional Fees: Course fee applies.

ART-242. Ceramics II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The study and practice of ceramics. Emphasis is placed on producing finished pottery.
Prerequisites: ART-241
Additional Fees: Course fee applies.

ART-291. Special Topics in Art. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Studio work in selected topics or issues in art.
Additional Fees: Course fee applies.

ART-292. Special Topics in Art as an Art Form. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Studio work in selected topics or issues in art.
Additional Fees: Course fee applies.

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Aviation Flight Technology (AVT)

Courses

AVT-101. Introduction to Aviation. 1 Credit.
LECT 1 hr.
An introduction to the career of an aviation professional. Topics discussed include the history of commercial aviation and the regulations that govern the industry, the professional ethics and responsibilities of the aviation professional, an overview of career opportunities, typical career paths and basic qualifications.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

AVT-103. Introduction to Basic Flight Training. 3 Credits.
LECT as required
This course serves as the initial introduction to flight training for students enrolled in the Aviation Flight Technology program. Students are introduced to basic airmanship, airplane controls and radio communication. The student will start with initial lessons in the college's simulator and progress to actual flight time in an airplane. This course will take place both on and off campus. Scheduling of flight lessons is the responsibility of the student. Students must be at least up to Flight Lesson 6 to fulfill the requirements of the course. This course runs for 15 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

AVT-110. Flight Operations I. 3 Credits.
LECT 3 hrs.
This course is designed to prepare students to successfully pass the FAA Private Pilot computer examination. The course is also designed to complement the Flight Training IA course (AVT-111). The subject area includes introduction to the airplane, airplane systems, airport, communication and air traffic control, weight and balance, meteorology, federal aviation regulations, aeronautical charts, radio navigation, Airman's Information Manual, flight computer, medical factors of flight and cross-country flying. The FAA Private Pilot knowledge exam is given at computer testing centers throughout the area. The scheduling of the exam and the fee to take the exam are the responsibility of the student.
Prerequisites: MAT-007 (or equivalent), Placement basis or ENG-025 or ENG-022 or ENG-007.

AVT-111. Flight Training IA. 1 Credit.
LECT as required
This course is the initial part of the flight training required for the Private Pilot Practical exam, airplane category, class single-engine land. The student starts with basic aircraft maneuvers, progressing through solo flight and the start of the cross-country flight requirements. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. A student must be at least up to Flight Lesson 12 to fulfill the requirements of the course. This course runs for 8 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
AVT-112. Flight Training IB. 1 Credit.
LECT as required
This is a continuation of Flight Training 1A. The student is expected to continue flight training requirements to meet the Private Pilot Practical exam. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. A student must successfully pass the Final Stage Check to fulfill the requirements of the course. This course runs for 8 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

AVT-118. Aerodynamics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of the aerodynamic forces that affect flight. Airframe designs are studied to determine what effects they have on aircraft performance. Other topics include glide performance, aircraft stability, range and endurance, and propulsive efficiency. Laboratory projects are performed to reinforce concepts learned in lecture.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

AVT-121. Flight Training IIA. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. The student is introduced to commercial maneuvers and instrument flying, solo cross-country flying using pilotage, dead reckoning and radio navigation. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 8 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

AVT-122. Flight Training IIB. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. The student is introduced to commercial maneuvers and instrument flying, solo cross-country flying using pilotage, dead reckoning and radio navigation. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 8 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

AVT-201. Flight Training IIIA. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. Students will complete the solo cross-country requirements during this phase of training and develop a high degree of proficiency in commercial and primary maneuvers. Instrument flight training begins in Flight III. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 5 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

AVT-202. Flight Training IIIB. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. The student is expected to continue solo cross-country flights, practice and refine the maneuvers and instrument flying procedures learned in Flight Training IIIA. This course takes place off campus at the airport and consists of approximately 20 hours of flight training. Scheduling of flight lessons is the responsibility of the student. This course runs for 5 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

AVT-203. Flight Training IIIC. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. The student is expected to continue solo cross-country flights, practice and refine the maneuvers and instrument flying procedures learned in Flight Training IIIB. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 5 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

AVT-205. Aircraft Systems. 3 Credits.
LECT 3 hrs.
It is the purpose of this course to have the student gain the knowledge of the design, function and operation of aircraft engines, aircraft instruments and maintenance operations. The student should be able to understand the inspections and the function of maintenance personnel as they relate to aircraft maintenance. The student should also be able to explain the operations of various aircraft components and instruments and describe their operation.
Prerequisites: MAT-007 (or equivalent), Placement basis or ENG-025 or ENG-022 or ENG-007.

AVT-208. Flight Operations: Instrument. 3 Credits.
LECT 3 hrs.
This course is designed to prepare students to pass the FAA Instrument Pilot Computer Examination. Subject areas include FAR's air traffic system and procedures, Airman's Information Manual, IFR navigation systems, IFR charts and approach procedures, weather, forecasts and IFR flight instruments. Successful completion of this course requires a passing grade on the FAA Commercial Pilot Knowledge Exam, which is given at computer testing centers available throughout the area. The fee for the exam is the responsibility of the student.
Prerequisites: AVT-110.

AVT-211. Flight Training IVA. 1 Credit.
LECT as required
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. Students should develop a high degree of proficiency in commercial and primary maneuvers, instrument approaches and en-route procedures. In addition, instruction and flights in complex aircraft take place during this phase. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 8 weeks.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
AVT-212. Flight Training IVB. 1 Credit.  
LECT as required  
This is a continuation of flight training required to meet the practical test standards for the commercial certificate and instrument rating. The student is expected to demonstrate proficiency as a commercial pilot with an instrument rating. This course takes place off campus at the airport. Scheduling of flight lessons is the responsibility of the student. This course runs for 8 weeks.  
Prerequisites: Permission of department chair  
Additional Fees: Course fee applies.  
AVT-215. Flight Operations: Commercial. 3 Credits.  
LECT 3 hrs.  
This course is a continuation of the study of commercial pilot flight operation and is designed to prepare the student to successfully pass the FAA Commercial Pilot computer examination. Subject areas covered include advanced topics in aircraft performance, meteorology, aircraft systems, radio navigation, aerodynamics, weight and balance, FARs, physiology of flight, environmental systems and operational procedures. Successful completion of this course requires a passing grade on the FAA Commercial Pilot Knowledge exam, which is given at computer testing centers available throughout the area. The fee for the exam is the responsibility of the student.  
Prerequisites: AVT-110.  
AVT-239. Cooperative Work Experience - AVT. 3 Credits.  
COOP 3 hrs.  
A field experience in one of the various aspects of the aviation industry (non-flying positions). Designed for the students in Program 3640 to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included.  
Prerequisites: Permission of department chair.  
AVT-291. Special Topic in Flight Training I. 1 Credit.  
LAB 2 hrs.  
The Special Topics in Flight Training I, II and III allows for the insertion of additional flight hours in the flight training program for the curriculum. The course content can be adjusted to meet the needs of a student requiring specialized flight training or additional hours in order to complete the specific requirements of a certificate, add-on or specialization. The student must, with the help of the faculty, establish specific goals and objectives for the completion of a Special Topics in Flight Training segment. Flight training will take place off-campus at the contracted flight school, and scheduling of the lessons is the responsibility of the student.  
Prerequisites: Permission of department chair  
Additional Fees: Course fee applies.  
AVT-292. Special Topics in Flight Training II. 1 Credit.  
LAB 2 hrs.  
The Special Topics in Flight Training I, II and III allows for the insertion of additional flight hours in the flight training program for the curriculum. The course content can be adjusted to meet the needs of a student requiring specialized flight training or additional hours in order to complete the specific requirements of a certificate, add-on or specialization. The student must, with the help of the faculty, establish specific goals and objectives for the completion of a Special Topics in Flight Training segment. Flight training will take place off-campus at the contracted flight school, and scheduling of the lessons is the responsibility of the student.  
Prerequisites: Permission of department chair  
Additional Fees: Course fee applies.  
AVT-293. Special Topics Flight Training III. 1 Credit.  
LAB 2 hrs.  
The Special Topics in Flight Training I, II and III allows for the insertion of additional flight hours in the flight training program for the curriculum. The course content can be adjusted to meet the needs of a student requiring specialized flight training or additional hours in order to complete the specific requirements of a certificate, add-on or specialization. The student must, with the help of the faculty, establish specific goals and objectives for the completion of a Special Topics in Flight Training segment. Flight training will take place off-campus at the contracted flight school, and scheduling of the lessons is the responsibility of the student.  
Prerequisites: Permission of department chair  
Additional Fees: Course fee applies.  

Biology (BIO)  

Courses  

BIO-100. Elements in Biology. 3 Credits.  
LECT 3 hrs.  
A foundation providing necessary skills and concepts needed to pursue the biology major. The course stresses skill development in areas such as communication, classification, inquiry, mathematical measurement, data analysis and report writing. Skills then are applied to the study of the cell cycle and diverse life processes.  
Additional Fees: Course fee applies.  

BIO-101. Anatomy and Physiology I. 4 Credits.  
LECT 3 hrs., LAB 3 hrs.  
The structure and function of the human organism is studied. Special emphasis is given to interrelationships of organs and organ systems. Cellular morphology and function are included for an appreciation of the adult form. The student is introduced to basic chemistry, the cell, basic tissues, the skeletal, muscular and nervous systems. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.  
Prerequisites: Placement basis or ENG-007 or ENG-025 or ENG-022 and MAT-016  
Additional Fees: Course fee applies.  

BIO-102. Anatomy and Physiology II. 4 Credits.  
LECT 3 hrs., LAB 3 hrs.  
A continuation of Anatomy and Physiology I. The circulatory, respiratory, digestive, urinary, endocrine and reproductive systems are studied. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.  
Prerequisites: BIO-101 (Minimum grade of C)  
Additional Fees: Course fee applies.  

BIO-115. Human Sexuality. 3 Credits.  
LECT 3 hrs.  
Provides an introductory knowledge of the basic topics in human sexuality. Topics presented are the basic structure and function of the male and female reproductive systems, sexual response and behavior, pregnancy, birth control, sexual disease, atypical behavior, sex and the law, and sexuality through the life cycle. Films, slides, panel discussions and guest lectures are employed to enhance the educational process. The course is open to all students at the college as a free elective and does not fulfill any science requirement.
BIO-116. Animal Control Officer’s Training Course. 3 Credits.
LECT 3 hrs.
Preparation for New Jersey State Certification as an Animal Control Officer. Topics include legal authority for animal control (federal, state, local); courtroom procedures; animal behavior, capture and handling; disease recognition, prevention and control; shelter operations; and community relations.

BIO-118. Biomedical Ethics. 3 Credits.
LECT 3 hrs.
This course introduces students to major ethical issues in areas of biomedicine in contemporary society. The focal point of the course is a process for ethical reasoning and ethical decision making. Students identify ethical problems, assess information relevant to decisions, identify stakeholders affected by decisions, recognize competing values, consider options, make decisions and realize the consequences of decisions. The process is applied to issues in such fields as genetics, death and dying, reproduction, public policy and medical decision making. This course does not fulfill a laboratory science requirement.

BIO-121. General Biology I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include the fundamentals of chemistry, cell structure and function, and the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-122. General Biology II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A continuation of General Biology I. Topics include homeostasis, animal reproduction, embryonic development, genetics, ecology and evolution. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: BIO-121 or BIO-180 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-123. Cell Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall semester only. An introduction to the fundamentals of cellular biology. Topics covered are the nature of biologically important molecules, molecular synthesis, energetics, cellular structure and function, cell reproduction, heredity, and basic laboratory techniques for cellular study. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-127. Biology of Environmental Concerns. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A survey of ecological issues from a variety of perspectives. The course provides an awareness of environmental problems, a knowledge of cause-and-effect relationships of diverse activities on this planet and a basis for making informed judgments about the potential solutions to environmental problems. Major topics include the roots of our environmental problems, introductory concepts in ecology, human population dynamics and control, food resources and world hunger, renewable and nonrenewable energy resources, mineral resources and solid waste, wild plant and animal resources, water resources, air pollution, water pollution, pesticides and pest control, economics, politics and the environment, world views, and ethics and the environment. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

BIO-132. Concepts in Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. A basic introduction to the study of biological science designed for the non-science major. Topics include the hierarchy of organization, life processes, cell theory, human genetics, theories of evolution, biochemistry and some principles of ecology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022
Additional Fees: Course fee applies.

BIO-133. Human Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. An introduction to the body systems and the factors which affect human physiology. Lectures include the basic anatomy and physiology of the major systems plus discussion topics emphasizing nutrition, exercise, sexuality, genetic engineering and recent advances in biotechnology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022
Additional Fees: Course fee applies.

BIO-180. General Biology I - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include fundamentals of chemistry, cell structure and function, the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
Prerequisites: Permission of department chair or honors advisor
Additional Fees: Course fee applies.
BIO-181. General Biology II - Honors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. A continuation of BIO-180 General Biology I Honors. Topics include homeostasis, animal reproduction and embryonic development, genetics, ecology, and evolution. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
Prerequisites: BIO-180 or BIO-121 and permission of honors advisor
Additional Fees: Course fee applies.

BIO-201. Genetics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. Provides the student with a broad knowledge of genetics from the molecular to the organismal level. Topics covered include the molecular and Mendelian concepts of heredity and their relationship to cell function, development, population changes and evolution, and biotechnology. Laboratory exercises emphasize a variety of techniques and skills used in genetic research and testing.
Prerequisites: BIO-121 and BIO-122 or BIO-180 and BIO-181 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-202. Ecology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Fall Semester only. This course introduces the basic fundamentals of ecology, the study of the interrelationships between organisms and their environment. Topics include an introduction to ecosystem structure and function, abiotic factors in ecosystems, energy flow and mineral cycling, population and evolutionary ecology, community ecology, a comprehensive survey of aquatic and terrestrial ecosystems, and human ecology. Laboratories and field trips are designed to introduce students to techniques used in basic ecological research.
Prerequisites: BIO-121 or BIO-180 or LHT-110 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-215. Microbiology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of microorganisms, including viruses, bacteria, fungi, protozoa and algae. Topics covered include microbial anatomy, physiology, genetics, ecology and methods of control. Research methods and modern immunological concepts also are discussed. Laboratory exercises in basic microbiological techniques and the study of living microorganisms are designed to supplement the theory presented.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022 and BIO-101 or BIO-121 or BIO-123 or BIO-180 (Minimum grade of C) and CHM-117 or CHM-125 and CHM-126 (Minimum grade of C)
Additional Fees: Course fee applies.

BIO-223. Cell and Molecular Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
A comprehensive study of biological molecules and their functions. Emphasis will be placed on the mechanism and regulation of macromolecule synthesis. Laboratory exercises will focus on instrumentation and techniques used in biological research.
Prerequisites: BIO-121 or BIO-123 and CHM-125 and CHM-126
Additional Fees: Course fee applies.

BIO-226. Cooperative Industrial Experience - Biology. 3 Credits.
COOP 3 hrs.
On-site work hours 300. An opportunity for selected students enrolled in the Biotechnology program to obtain job-oriented laboratory training in an industrial environment prior to career employment. Students desiring to participate in this experience should make their interest known to the department chair or the Office of Career Services and Cooperative Education by the end of their second semester.
Prerequisites: Permission of department chair.

BIO-233. Independent Study in Biology. 3 Credits.
LECT 3 hrs.
An opportunity for selected students to participate in biological research under close supervision of the biology faculty. Interested students should make their interest known early in the prior semester to the department chair, who will familiarize the students with criteria for selection and the steps to be taken to gain entrance to this course. This course does not fulfill any of the science requirements in biology but is offered as a free elective.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

BIO-260. Introduction to Marine Biology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer semester only. A field- and laboratory-oriented undergraduate course covering the biology and characteristics of marine animals and plants. The course is designed to provide experience in collecting and identifying examples of local marine organisms. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey
Prerequisites: BIO-121 and permission of department chair
Additional Fees: Course fee applies.

BIO-262. Introduction to Marine Sciences. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer semester only. A field- and laboratory-oriented undergraduate course covering the principal disciplines in the marine sciences. The course is designed to help the student evaluate his or her interest in the marine science world. New Jersey Sea Grant Consortium Laboratory at Sandy Hook, New Jersey
Prerequisites: BIO-121 and permission of department chair
Additional Fees: Course fee applies.

BIO-270. Immunology. 3 Credits.
LECT 3 hrs.
An introductory-level course that covers the basic immunologic concepts of cells and humoral products of the immune system, the genetic control of immunity and generation of diversity, and antigen-antibody reactions. These basic concepts are correlated to clinical applications as they relate to laboratory testing manifestations of disease, such as autoimmunity, hypersensitivity, transplantation, tumor immunology and immunodeficiency.
Prerequisites: BIO-215 (Minimum grade of C).

BIO-274. Pathophysiology. 3 Credits.
LECT 3 hrs.
Pathophysiology is a course which studies the physiological alterations associated with common disease processes which affect human beings across the lifespan. Common diseases of the major organ systems are covered as well as such general issues as infection, neoplasm, inflammation, fluid and electrolyte imbalance, trauma, and shock.
Prerequisites: BIO-101 and BIO-102 and CHM-117.
BUS-295. Special Topics in Biology. 4 Credits.
LECT 4 hrs.
An examination of selected topics or issues in biology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A introductory course in Biology
Additional Fees: Course fee applies.

Business (BUS)

Courses

BUS-111. Business Mathematics. 3 Credits.
LECT 3 hrs.
For Career Option students only. This course offers a foundation in the essential mathematics of business. Topics include fractions, percentages, banking records, simple and compound interest, discounts, retailing mathematics, inventory, depreciation and payroll. Mathematics of investments, finance and taxes may also be included.

BUS-112. Introduction to Business. 3 Credits.
LECT 3 hrs.
This course introduces both business and non-business majors to various fields of business study. Topics include foundations of business and economic systems, management and leadership styles, entrepreneurship, motivational theory and techniques, personnel and production management, accounting, information systems, business law, union/management relations and global issues. The course prepares students for higher-level business study and explores a variety of major options and career paths.

BUS-119. Business Information Systems and Applications. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course provides an introduction to the various technical tools available to help solve problems in the field of business technology. This is a hands-on laboratory course designed to provide the student with experience in using business calculators, Windows Operating System, Microsoft Office, Internet and marketing research tools. Special emphasis is placed on the accounting and other financial information reports using Microsoft Office’s Excel and Word programs.
Additional Fees: Course fee applies.

BUS-132. Fundamentals of Electronic Commerce. 3 Credits.
LECT 3 hrs.
This course offers the basic and necessary elements of understanding electronic commerce/business. Students are exposed to the nuts and bolts of building successful e-business enterprises. Included are an understanding of the business and value propositions; e-commerce business models; strategies for successful implementation; an understanding of e-commerce technologies, infrastructure and applications; e-commerce business functionality integration; security risk management; and electronic payments issues. Students in this class are expected to build and present a prototype e-commerce business enterprise as a group project.

BUS-135. Introduction to International Business. 3 Credits.
LECT 3 hrs.
This is essentially a survey course to introduce the field of international business and trade. A broad range of topics prepares students for the rapidly evolving global business world and for advanced study in international business. Topics include introduction to and overview of international business, the global economy, international business environments, issues related to operating and managing an international business, and concepts and theories related to the global marketplace.

BUS-136. Personal Finance. 3 Credits.
LECT 3 hrs.
This course provides a practical introduction to personal finance and money management by focusing on realistic ways to effectively manage and protect personal assets, minimize taxes and provide for a secure retirement. Students may design a personal budget and learn to make appropriate decisions with regard to savings, investments, insurance, credit protection and estate planning. Students evaluate the cost of borrowed money, real estate investments, effective use of credit, tax implications and the effects of the economy on personal financial decisions. The use of financial periodicals may be required.
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-201. Human Relations in Business. 3 Credits.
LECT 3 hrs.
This course provides a broad perspective dealing with human relations from the viewpoint of the manager. It treats the human aspect as it is encountered in the business organization. The behavior of individuals in interpersonal, intergroup and interorganizational situations as they relate to work is also studied.

BUS-205. Landscape Specifications and Estimating. 3 Credits.
LECT 3 hrs.
Required for students in Landscape Management and Design Agribusiness and Turf and Turfgrass Management and recommended for others with an interest in landscape maintenance or landscape design and installation. The course focuses on developing systems for the identification of costs associated with the preparation of landscape estimates and bids. Topics include pricing, budgeting, understanding and writing specifications; contracts and related issues; insurance and accounting applications for landscape businesses; estimating with an emphasis on cost-finding processes; and client and employee relations.

BUS-211. Money and Banking. 3 Credits.
LECT 3 hrs.
This course analyzes the organization and operation of our financial system. Included in the study are the money and capital markets, commercial banking and other financial institutions such as commercial finance companies. The relationship between financial and economic activity, including monetary and fiscal policy, is shown.
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.
BUS-212. Principles of Finance. 3 Credits.
LECT 3 hrs.
This course is a study of principles and practices followed in the financial organization and operation of a business organization including financing new and growing businesses, sources of capital, banking and credit accommodations, and the handling of other financial matters.
Prerequisites: ACC-111 and ENG-025 or non-course equivalent.

BUS-213. Business Law I. 3 Credits.
LECT 3 hrs.
This course is a basic study of the fundamentals of legal liability, the growth of our legal system, and the legal rights, duties and obligations of the individual. Specifically covered are law and society, contracts, agency, and employment. Where applicable, the Uniform Commercial Code is used as the basis for statutory interpretation.

BUS-214. Business Law II. 3 Credits.
LECT 3 hrs.
This course is a further study of business law, covering personal property, bailments, sales, partnerships, commercial paper, secured transactions and insurance. Where applicable, the Uniform Commercial Code is used as the basis for statutory interpretation.
Prerequisites: BUS-213.

BUS-215. Principles of Management. 3 Credits.
LECT 3 hrs.
This course is a study of the basic managerial functions of planning, organizing, staffing, directing and controlling. Emphasis is placed on the theory of management, organization and executive leadership. Case studies of actual business situations present problems requiring executive decisions for solution.
Prerequisites: ENG-111, ENG-112 and BUS-119.

BUS-218. Investment Principles. 3 Credits.
LECT 3 hrs.
This course introduces students to basic types of investment alternatives focusing on the mechanics of investing including online investing, researching and interpreting financial information, understanding risk/return tradeoffs, and reviewing investment strategies associated with various stock orders. The course offers a thorough review of the primary and secondary securities markets, securities regulations and ethics, and a general understanding of the impact of the economy and the Federal Reserve on investment decisions. The course objective is to develop students into independently sophisticated investors through a practical hands-on approach. The use of financial periodicals may be required.
Prerequisites: MAT-016 or non-course equivalent and ENG-025 or non-course equivalent.

BUS-219. Small Business Operations. 3 Credits.
LECT 3 hrs.
This course focuses on all aspects of operating an existing business and in starting a new venture, culminating in the preparation and simulated execution of a business plan. Study includes evaluations of both new and existing businesses, financing approaches, forms of ownership, traditional and Internet marketing and advertising, directing, staffing, purchasing, risk mitigation, cash management, tax obligations, bootstrapping techniques, and financial and breakeven evaluation. This is a hands-on pragmatic approach to small business management.

BUS-222. International Finance. 3 Credits.
LECT 3 hrs.
International Finance provides a basic understanding of the relationship between the international business environment and the international financial markets. Topics to be covered include: international flow of funds, international capital markets, international monetary system, exchange rate behavior, and financial management of the multinational firm.
Prerequisites: ENG-025 or non-course equivalent and ECO-211.

BUS-224. Cooperative Work Experience-Business. 3 Credits.
LECT 3 hrs.
This course provides students enrolled in the Business Career curriculum with job-oriented training and practical work experience in a work environment prior to permanent employment. The course may be taken in fulfillment of a business elective in the Business Career curriculum. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their third semester.
Prerequisites: Permission of department chair Corequisites: BUS-225.

BUS-225. Cooperative Work Experience Business- Related Class. 1 Credit.
LECT 3 hrs.
A supplement to the cooperative work experience program, this course provides a variety of experiences to further develop students' career development and occupational adjustment. It also develops positive points of view toward human relationships and the responsibilities of both the employee and the employer.
Prerequisites: Permission of department chair Corequisites: BUS-224.

BUS-226. Internship Work Experience-Business. 3 Credits.
LECT 3 hrs.
This course provides students enrolled in the Business curriculum with job oriented training and practical work experience in a non-paid work environment prior to permanent employment. The course may be taken in fulfillment of a business elective. Students desiring to participate in this experience should make their intentions known to the department chair during the prior semester.
Prerequisites: Permission of department chair Corequisites: BUS-225.

BUS-232. Electronic Commerce Management. 3 Credits.
LECT 3 hrs.
This course includes features and characteristics that will provide an understanding of the essential elements of managing e-business functions, processes and integrated information systems. Included are: the structure, functions and management of digital organizations, systems integration and collaborative applications, workflow and process management, customer relationship management, enterprise resource planning, records and data management, risk management, business process re-engineering as well as strategic management issues and applications.

BUS-234. Supply Chain Management. 3 Credits.
LECT 3 hrs.
This course introduces the concepts of supply chain management. The student comes to understand how good supply chain management can be a competitive advantage of a firm. Within the strategic framework, facilities, inventory, transportation and information are identified as key drivers of supply chain management.
BUS-235. Investment Analysis. 3 Credits.
LECT 3 hrs.
Builds on the knowledge learned in the Investment Principles course with more in-depth security analysis. The course takes a strategy approach to investing by employing hands-on techniques for profitable decision making within a diversified portfolio. Learning risk/return tradeoffs, reducing risk through portfolio analysis under particular economic conditions, exploring fundamental and technical analysis, and utilizing derivatives by adding futures and options to a portfolio allows the student to become a more knowledgeable decision maker. Other topics include the time value of money, financial ratio analysis, and the use of real estate alternatives and limited partnerships in portfolio creation. The use of financial periodicals is required.
Prerequisites: BUS-218.

BUS-240. Small Business Planning and Finance. 3 Credits.
LECT 3 hrs.
This course focuses on the planning and financing of small business ventures. Included is the development of a business plan. This includes market analysis and a resulting marketing plan, a comprehensive operations plan and the development of financial projections. Attention also is placed on attracting seed and growth capital from such sources as individuals, family, venture capital, investment banking and commercial banks. Bootstrapping or creative ways for obtaining greater impact of available funds is introduced. The end of the business cycle, business valuation and exit strategies are fully explored.
Prerequisites: ENG-025 or non-course equivalent and MAT-016 or non-course equivalent.

BUS-242. Customer Relations. 3 Credits.
LECT 3 hrs.
This course focuses on customer relations as the measure of present and future business success. It begins with describing how business develops its business strategy on identified customer base. Recognizing the challenge of meeting customer expectations, the course defines customer satisfaction and introduces approaches to move from satisfying the customer to delighting the customer. A comprehensive customer relations process, customer relationship management, is introduced and its role discussed in the electronic business age.

BUS-291. Special Topics in Business. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in business areas of study. Topics may differ each time the course is offered. Students should consult with the Department of Business Administration chair for additional information. Prerequisites may be required dependent on topic of study.

BUS-292. Special Topics in Business. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in business areas of study. Topics may differ each time the course is offered. Students should consult with the Department of Business Administration chair for additional information. Prerequisites may be required dependent on topic of study.
Corequisites: BUS-224.

Courses

CHM-100. Elements of Chemistry. 3 Credits.
LECT 3 hrs.
A one-semester, introductory 3-credit, non-laboratory course designed for students with little or no background in chemistry. Emphasis is on preparing students for General Chemistry and Introductory Chemistry courses. The course encompasses chemical principles and calculations with a brief review of algebra.
Prerequisites: MAT-016.

CHM-105. Forensic Science. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Designed for the non-science major. An introduction to the applications of the physical and biological sciences in analyzing and evaluating physical evidence as related to crime and the law.
Additional Fees: Course fee applies.

CHM-117. Introductory Chemistry Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
An introduction to the basic concepts of inorganic, organic and biochemistry. The emphasis is on the relationship of these concepts to physiological chemistry and living systems. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 (minimum grade of C) and ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-118.

CHM-118. Introductory Chemistry Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-117. Required for Landscape and Horticultural Technology, liberal arts majors and some Allied Health programs.
Prerequisites: Placement basis or MAT-016 and ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-117
Additional Fees: Course fee applies.

CHM-125. General Chemistry I - Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
A study of the fundamental principles of chemistry and their application to chemical reactions. Topics include the structure of the atom, concepts of matter, mass relationships for pure substances and chemical reactions, solutions, electronic structure, the chemical bond, nuclear reactions and gases. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-126.

CHM-126. General Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-125. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement College Level Math test or MAT-110 (minimum grade of C) and Placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-125
Additional Fees: Course fee applies.
CHM-127. General Chemistry II - Lecture. 3 Credits.
RECI 1 hr., LECT 3 hrs.
A continuation of General Chemistry I with emphasis on chemical equilibrium and energy changes in chemical reactions. Also included are acids, bases, buffers, chemical thermodynamics, kinetics, qualitative analysis and electrochemistry. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 (minimum grade of C), CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-128.

CHM-128. General Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments illustrate principles studied in CHM-127. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-125 and CHM-126 and placement basis or ENG-025 or ENG-022 or ENG-007
Corequisites: CHM-127
Additional Fees: Course fee applies.

CHM-136. Environmental Regulation. 3 Credits.
LECT 3 hrs.
This course is an overview of critical environmental issues encountered by industry from a regulatory perspective. Various federal and New Jersey state regulations pertaining to air, water, hazardous waste and hazardous materials management are investigated. Students acquire knowledge on how industry complies with the diversity of regulatory requirements. Students are exposed to examples of instances where industrial non-compliance with applicable regulations has led to deleterious environmental and occupational health effects. Current issues and their significance to environmental and occupational health are discussed including, Clean Water Act, Clean Air Act, Environmental Cleanup and Responsibility Act (ECRA), Resource Conservation and Recovery Act (RCRA), Occupational Safety and Health Act (OSHA), Toxic Substance Control Act (TSCA), Asbestos, indoor air quality and underground storage tanks.
Prerequisites: BIO-123 and CHM-125.

CHM-204. Principles of Occupational Health and Safety. 3 Credits.
LECT 3 hrs.
A survey course providing an overview of industrial hygiene and the roles that the industrial hygiene professional plays in recognizing, evaluating and controlling hazards in the workplace. This course provides an introduction to the qualitative and quantitative issues essential to comprehend occupational safety and health principles. Case studies and hands-on exercises are utilized to stress key concepts.

CHM-210. Essentials of Organic Chemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Summer Semester only. This course is the study of the basic principles of structure, reactivity and nomenclature in organic chemistry. The laboratory develops basic skills in the types of experiments performed in a typical organic chemistry laboratory with emphasis on the safe handling of laboratory chemicals and the proper presentation of experimental results.
Prerequisites: CHM-117, CHM-118 or CHM-127, CHM-128 (minimum grade of C for all prerequisites)
Additional Fees: Course fee applies.

CHM-212. Biochemistry. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Spring Semester only. An introduction to physiological chemistry. Lectures cover amino acids, proteins, lipids, nucleic acids, carbohydrates, molecular genetics, energetics and metabolic pathways. Lab reinforces concepts covered in lecture. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-117 or CHM-125
Additional Fees: Course fee applies.

CHM-219. Quantitative Chemical Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Fall Semester only. Principles of modern quantitative methods in chemistry, including the study of chemical equilibria, solubility, acidity and complex formation. The laboratory work involves practical applications of inorganic and organic analysis including volumetric, gravimetric, chromatographic and instrumental techniques. Emphasis is placed on the statistical treatment of data and report writing. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127 (minimum grade of C) or equivalent
Additional Fees: Course fee applies.

CHM-220. Instrumental Methods of Analysis. 5 Credits.
LECT 3 hrs., LAB 6 hrs.
Spring Semester only. This survey course covers theory and applications of modern instrumentation utilized to solve problems in chemical analysis. Laboratory work involves hands-on experience utilizing instruments such as gas(GC), liquid(HPLC) and ion chromatography; spectrophotometric methods including visible, ultraviolet, infrared(FTIR) and atomic absorption; ICP and other methods, including ion selective electrode methods; and electrophoretic methods including capillary electrophoresis(HPCE). Emphasis is placed on the comparison of methods, the collection and interpretation of laboratory data, technical report writing and record keeping. All remedial courses listed must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and CHM-127 or equivalent (minimum grade of C)
Additional Fees: Course fee applies.

CHM-228. Cooperative Industrial Experience - Chemical Technology. 3 Credits.
COOP 3 hrs.
This course provides selected students enrolled in the Technology programs with job-oriented laboratory training and practical work experience in an industrial environment prior to career employment. The course may be taken as a three-credit technical elective. Students desiring to participate in this experience should make their interests known to the department chair by the end of their second semester. Fourth semester status in Chemical Technology, Environmental Science Option or Biotechnology programs required.
Prerequisites: Permission of department chair.
CHM-231. Organic Chemistry I - Lecture. 3 Credits.
LECT 3 hrs.
This course is an introduction to the chemistry of carbon compounds. Topics include a study of the fundamental concepts of structure and stereochemistry, physical properties of organic compounds and a functional approach to the interpretation of organic reactions. This course is designed for majors in Biology, Chemistry, Pharmacy, and for students preparing for medical, dental and veterinary schools. All remedial courses listed must be completed prior to taking this course.
Prerequisites: An introductory course in Chemistry and permission of department chair.
Corequisites: CHM-232.

CHM-232. Organic Chemistry I - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments stress techniques involved in the synthesis and purification of typical organic compounds using both macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Corequisites: CHM-231
Additional Fees: Course fee applies.

CHM-233. Organic Chemistry II - Lecture. 3 Credits.
LECT 3 hrs.
A continuation of the study of organic compounds with further study of functional groups, reaction mechanisms including nucleophilic substitution and elimination reactions, and infrared and nuclear magnetic resonance spectroscopy. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 (Minimum Grade of C)
Corequisites: CHM-234.

CHM-234. Organic Chemistry II - Laboratory. 1 Credit.
LAB 3 hrs.
Laboratory experiments involve the multi-step synthesis of organic compounds, which illustrate the principles of CHM-233, using macroscale and microscale techniques. All remedial courses listed must be completed prior to taking this course.
Prerequisites: CHM-231 and CHM-232
Corequisites: CHM-234
Additional Fees: Course fee applies.

CHM-235. Independent Study in Chemistry. 3 Credits.
LECT 3 hrs.
This course is an opportunity for selected students to participate in independent research under close supervision of a Chemistry faculty member. Interested students should make their interests known early in the prior semester to the department chair who will detail the criteria for selection.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CHM-236. Special Topics in Chemistry. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in chemistry. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Chemistry and permission of department chair.
Additional Fees: Course fee applies.

CHI-111. Elementary Chinese I. 3 Credits.
LECT 3 hrs.
This course is intended for students with no prior knowledge of, or with limited background in the language. Emphasis is on the fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. Students learn Mandarin Chinese using "pinyin" romanization and are introduced to simplified and traditional characters. Not for native speakers and not intended for students with two or more years of high school Chinese.
Prerequisites: CHI-111 or permission of department chair.

CHI-211. Intermediate Chinese I. 3 Credits.
LECT 3 hrs.
This course is a continuation of Elementary Chinese I. It expands the Chinese vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Chinese language. Students are introduced to simplified versions of Chinese literature.
Prerequisites: CHI-112 or permission of department chair.

CHI-212. Intermediate Chinese II. 3 Credits.
LECT 3 hrs.
This course is a continuation of Intermediate Chinese I. It expands the Chinese vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Chinese language. Students are introduced to basic Chinese literature and philosophy along with advanced grammatical patterns.
Prerequisites: CHI-211 or permission of department chair.

CHI-291. Special Topics in Chinese I. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Chinese language or culture. Topics may differ each time the course is offered. Students should contact the department chair for further information.
Prerequisites: An advanced course in Chinese or permission of department chair.
CHI-292. Special Topics in Chinese II. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Chinese language or culture. Topics may differ each time the course is offered. Students should contact the department chair for further information.
Prerequisites: An advanced course in Chinese or permission of department chair.

College Student Success (CSS)

Courses

CSS-011. College Student Success. 2 Credits.
LECT 2 hrs.
College Student Success CSS-011 is a college-wide course that is required for students that test into ENG-025 Writing Skills and whose major programs are in the Division of Liberal Arts. This course is designed to assist first year students in their adjustment and success with the college experience. Topics include academic expectations and developing skills to meet them, time management, introduction to campus resources, library use, career choices, computer resources, academic advisement, and selected seminar topics. This course will also introduce the development of leadership skills as an integral part of the learning process. This course is not designed for transfer purposes to four-year colleges. The course is designed to enhance students’ academic skills to help increase the odds of succeeding in achieving their educational goals.

Communication (COM)

Courses

COM-101. Introduction to Communication. 3 Credits.
LECT 3 hrs.
Survey of the field of communication within a variety of contexts including: Interpersonal, Group, Organizational, Mass Media, Intercultural and International Communication.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

COM-102. Advertising and Society. 3 Credits.
LECT 3 hrs.
This is a survey course that follows the advertising industry from the early days of the Industrial Revolution through modern social campaigns. There will be a strong emphasis on the cultural and societal effects of advertising messages on mass markets. There will also be a focus on advertising as a form of social communication, which has imbedded impacts on socio-economic, political and global communication. Students will acquire skills in media literacy and ethical reasoning with respect to advertising campaigns. By the end of the course students will be able to identify the current challenges to consumers and the advertising industry.
Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.

COM-103. Introduction to Public Relations. 3 Credits.
LECT 3 hrs.
This course is a survey of the principles and practices in public relations. Students gain an understanding of the history, development and globalization of PR, the impact of PR criticism, the techniques and tactics of PR practitioners. They learn the concepts of "publics" and professionalism. Special emphasis is placed on the comprehension of the laws and ethics mandated for the PR industry and the goals and objectives necessary to the future credibility of PR.
Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.

COM-104. Interpersonal Communication. 3 Credits.
LECT 3 hrs.
Students in this course discover how to communicate effectively in everyday relationships through the study of both theoretical frameworks and practical application. Topics include self-perception, cultural influences, verbal and nonverbal messages, conflict management, as well as an in-depth look at communication within the family unit, friendships, romantic partners and the workplace.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

COM-105. Media Literacy. 3 Credits.
LECT 3 hrs.
Media Literacy prepares students to better understand the 21st century media environment. Topics covered include media form, media content, media effects and influence, and media industries. There will be a particular focus on developing stronger critical and analytical skills to better use media for personal and professional benefit. We will investigate media through several perspectives with a concentration on how media works and how to better navigate and manage the information we receive.
Prerequisites: Placement basis or ENG-007, ENG-022 or ENG-025.

COM-109. Speech Fundamentals. 3 Credits.
LECT 3 hrs.
This course introduces the fundamentals of organizing, outlining, and presenting narrative, informative and persuasive speeches. Specific attention is given to each student's verbal and nonverbal delivery in the communication of ideas, as well as to the development of creative abilities, critical insights and listening skills.
Prerequisites: Placement Basis or ENG-007 or ENG-022 or ENG-025.

COM-111. Introduction to Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in reporting and writing news stories across multimedia platforms. Topics include new media, writing, reporting, interviewing, researching, news judgment, Associated Press style, media ethics and media law. Students utilize computers in the classroom to research topics and complete assignments on deadline. The culmination of the course is an e-portfolio that utilizes a basic content management system and combines written articles with original photography. A one-time commitment of three hours of newspaper production is required.
Corequisites: ENG-111 or department permission.
COM-112. Advanced Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in news reporting, computer-assisted reporting and writing techniques. Specialized topics include profile writing, government meetings, statistics/budgets, police, weather, tragedies, global issues, news conferences, speeches, media ethics and media law. Students utilize computers in the classroom to research topics and complete assignments on deadline. New media is incorporated throughout the semester. A one-time commitment of 6 hours of newspaper production on campus is required.
Prerequisites: COM-111 or permission of department chair.

COM-115. Introduction to the Mass Media. 3 Credits.
LECT 3 hrs.
Introduction to Mass Media is a survey course focusing on the history and consequences of mass media for the individual, society and culture. Specific areas of emphasis include the historical development of media forms, theories concerning the effects of media, and the evolving future of media. Special attention will also be paid to current events in the media and their social consequences.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-007.

COM-120. Broadcast Journalism. 3 Credits.
LECT 3 hrs.
Instruction and practice in broadcast reporting, writing and editing. Students utilize traditional broadcast skills within a multimedia environment. Topics include broadcast writing techniques and style, newscast organization, photojournalism, social media, new media, broadcast stories for online journalism, media ethics and media law. Students write broadcast scripts, maintain blogs and produce timed newscasts.
Prerequisites: COM-111.

COM-209. Editing and Publication Design. 3 Credits.
LECT 3 hrs.
Instruction and practice in copy editing, layout, design, headline writing, photo editing, news evaluation, media ethics and media law. Students utilize computers, Adobe Photoshop and Adobe InDesign to complete assignments, and they help produce the student newspaper.
Prerequisites: COM-111 or permission of department chair.

COM-228. Cooperative Work Experience Communication. 3 Credits.
COOP 3 hrs.
This course provides students in the Communications curriculum with job-oriented training and practical experience in a real work environment. This course is designed to supplement the students academic coursework and to facilitate the career development and exploration process.
Prerequisites: Permission of department chair
Corequisites: COM-229.

COM-229. Coop. Work Experience - Related Class. 1 Credit.
LECT 1 hr.
Prerequisites: Permission of Coordinator
Corequisites: COM-228.

COM-230. Communications Internship. 3 Credits.
LECT 3 hrs.
The Communication Internship offers practical experience working part-time for an approved communication agency, organization or business under the supervision of a Communication faculty. Alternatively, it can be used to complete a significant research project under the guidance of a Communication faculty member. Students must have second year status, GPA of 3.5 or higher.
Prerequisites: Permission of department chair.

COM-234. Introduction to Film. 3 Credits.
LECT 3 hrs.
Through the study of representative major works of world cinema, students are introduced to the history and development of film as a creative medium or artistic expression and mass communication. Topics include production practices, cinema as an industry, the relationship between history and cinema, the psychology of cinema, and socio-cultural factors related to cinema. Students are encouraged to approach film analytically and critically, to consciously examine the language and aesthetic forces of cinema, and to expand cinematic interest into realms beyond the Hollywood mainstream production.
Prerequisites: Placement basis or ENG-007 or ENG-025 or ENG-022.

COM-291. Special Topics in Communication. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Communication. Topics may differ each time the course is offered. Students should consult the assistant chair for further information.
Prerequisites: An introductory course in Communication.

COM-292. Special Topics in Communication. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Communication. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Communication.

Computer Information Systems (CMP)

Courses

CMP-101. Computer Information Literacy. 1 Credit.
LECT 1 hr., LAB 1.5 hr.
This general education course provides students with an introduction to basic computer concepts that include learning the fundamentals of Windows, accessing the World Wide Web and using Microsoft Word. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.
Additional Fees: Course fee applies.

CMP-104. Internet Literacy. 3 Credits.
LECT 3 hrs.
This general education course provides an in-depth study of the Internet and the knowledge necessary to be a contributing user of the World Wide Web. Topics covered include ISPs, browsers, search engines, netiquette, email, newsgroups, streaming media, file types, and societal issues and trends. This course is offered online. Not for Computer Information Systems majors.
Additional Fees: Course fee applies.

CMP-108. Game Design Concepts. 3 Credits.
LECT 3 hrs.
This course provides the student with an introduction to fundamental game design concepts. The range of topics includes game worlds and settings, character creation, storytelling, game audio, game art and animation, gameplay and user interface design. In addition, the history of the game industry, social impact and the future of gaming are discussed. Students analyze various games and genres and create their own game design document.
Additional Fees: Course fee applies.

CMP-110. Introduction to Data Processing. 3 Credits.
LECT 3 hrs.
Topics in this general education course include computer hardware and software concepts, application and systems software, the Internet and World Wide Web, data communications, and the social impact of computers. Problem solving using software application packages will be implemented. Not for Computer Information Systems majors. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Additional Fees: Course fee applies.

CMP-120. Foundations of Information Security. 3 Credits.
LECT 3 hrs.
This course provides a principled introduction to the field of information security. History, characteristics and models of information and computer security are explored. Topics such as risk management, logical and physical security, continuity, cryptography, and architecture are discussed. The CISSP knowledge domains are incorporated into the course content affording the student reinforcement and mastery of information security terminology and concepts.
Additional Fees: Course fee applies.

CMP-123. Systems Analysis and Design. 3 Credits.
LECT 3 hrs.
Techniques of object-oriented and structured systems analysis and design are examined in the context of the software development life cycle. Topics include project management, Unified Modeling Language (UML) diagrams, data flow diagrams, system flow charts, application and user-interface design. Class projects provide students with practice in using CASE tools in the analysis and design of application systems. Students participate in a semester-long team project to design an application.
Prerequisites: CMP-128 and one of the following: CMP-129, CMP-150, CMP-237, CMP-239
Additional Fees: Course fee applies.

CMP-124. Network Security. 3 Credits.
LECT 3 hrs.
This course provides an in-depth study of network attack techniques and methods to defend against them. Areas of study include communication security, infrastructure security, cryptography, and operational and organizational security as it relates to network hardware, software and data. Topics include authentication, attacks, virtual private networks, email protection, web security, wireless, firewalls, intrusion detection, cryptography, disaster recovery and computer forensics regarding networked systems. Using a hands-on approach, powerful tools to diagnose and correct security breaches are investigated and manipulated. This course is mapped to vendor-neutral certification exams.
Additional Fees: Course fee applies.

CMP-125. Information Security Management Security. 3 Credits.
LECT 3 hrs.
This course entails identifying an organization's information assets and the development, documentation and implementation of policies, standards, procedures and guidelines that ensure confidentiality, integrity and availability of those assets. This course prepares students to understand the planning, organization and roles of individuals involved in security, to develop security policies, and to utilize management tools to identify threats, classify assets and rate vulnerabilities. A detailed, real-world security plan is developed using customized strategies with an in-depth study of PKI (Public Key Infrastructure).
Additional Fees: Course fee applies.

CMP-126. Computer Technology and Applications. 4 Credits.
LECT 3 hrs., LAB 2 hrs.
This general education course teaches: (1) basic computer-use concepts such as hardware and peripherals, file organization and management, and operating system use; (2) Internet use, browsers and search engines; (3) software applications including word processing, spreadsheet, electronic slideshow presentations, database use and calendaring; (4) netiquette, ethics and copyright policies; (5) downloading and installing software and plug-ins; (6) communications technologies including email, blogs and Web technologies; (7) personal computer and information security; and (8) career exploration, job search strategies and portfolio development. Students are required to complete a series of laboratory assignments that illustrate skills and use technologies in the areas listed including a cross-applications/technologies project. Students will not receive credit towards graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-128. Computer Science I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
In this introductory course, students obtain fundamental computer science knowledge and develop programming skills using an object-oriented approach, incorporating security awareness, human-computer interactions and social responsibility. This course provides students with a basic foundation in computing history, computing careers, computer organization, operating system responsibilities, software development process, algorithm design and analysis, programming paradigms, and human interaction design.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.
CMP-129. Computer Science II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is the second in a three-course sequence that provides students with a foundation in Computer Science. Students develop intermediate-level programming skills using an object-oriented approach with an emphasis on software development, fundamental algorithms and data structures, software assurance, and ethical conduct.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-150. Game Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course covers fundamental game programming techniques using an industry-standard scripting language. Students learn how to use a popular game engine to build game programs. Topics include sprites, animation, collisions, timers, game state variables, player input, audio, user interface design and storyboarding.
Laboratory work includes several game element programming exercises, leading up to a final game project.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.

CMP-160. Digital Forensics I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces the student to the fundamental concepts of computer forensics. By conducting a detailed examination of data media for structure, file system type, volumes, lost and hidden areas, the student will develop the ability to collect and analyze computer data for digital evidence. An understanding of specific resources and an exploration of software tools available for data recovery and forensic analysis will be conducted in a laboratory setting. Upon completion of this course the student will demonstrate various data recovery techniques as the basis for forensic evaluation.
Additional Fees: Course fee applies.

CMP-170. Mobile App Design. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to the design and development of mobile applications. Students will learn how to install and use a leading mobile app software development kit, design the user interfaces using different design patterns, create and edit app resources, and design and develop native source code. Students will strengthen their programming skills in user input, variables, operations, decision control structures, methods, lists and arrays.
Audio, images, animation and other application controls will be incorporated into apps. Other topics include testing, deployment and publishing apps.
Prerequisites: CMP-128
Additional Fees: Course fee applies.

CMP-200. Computer Operating Systems and Utilities. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This is an introductory course in personal computer operating systems. Topics include the features and characteristics of operating system software; installation and configuration including customization, file organization and management; memory and storage management; control of peripheral devices; troubleshooting; networking wizards; and the use of utilities to monitor system performance, backup data and optimize disks. Laboratory assignments provide hands-on opportunities for students to apply the information related in lectures.
Additional Fees: Course fee applies.

CMP-203. Computer Software Applications (MS Office). 3 Credits.
LECT 3 hrs., LAB 1 hr.
This general education course is designed to provide familiarity with contemporary software for word processing, electronic spreadsheets and database applications in a personal computer environment. An introduction to web browser software, electronic slide production and information management is also included. Students are required to complete a series of laboratory assignments that illustrate skill in using the above software applications including a cross-application project. Students must allocate time to complete assignments using current versions of the software (available on campus). Computer Information Systems majors must have department approval to take this course. Students will not receive credit toward graduation for more than one of the following courses: CMP-101, CMP-110, CMP-126, CMP-203 or BUS-119.
Prerequisites: ENG-025 or ENG-022 or ENG-007
Additional Fees: Course fee applies.

CMP-207. Electronic Spreadsheets (MS Excel). 3 Credits.
LECT 3 hrs., LAB 1 hr.
It is recommended that students take CMP-207 Electronic Spreadsheets before taking CMP-205. This course is designed to develop skill in the use of a leading database management system. Topics include the design and maintenance of relational databases and their objects (tables, queries, forms and reports). Also covered is the use of macros to implement procedures. The final portion of the course covers automation techniques by introducing the Visual Basic for Applications programming language and the use of this code to create a user-friendly interface.
Additional Fees: Course fee applies.

CMP-209. Introduction to UNIX. 3 Credits.
LECT 3 hrs., LAB 1 hr.
This course combines lecture with hands-on training in the UNIX Operating System. Upon successful completion of this course, students are proficient in using the UNIX Operating System commands and utilities. Topics include purpose and functions of an operating system, hierarchical file system, the shell, vi editor, file security, process management, sorting, networking theory and communications, redirection, piping, and an introduction to shell scripts.
Prerequisites: CMP-128 or equivalent
Additional Fees: Course fee applies.
**CMP-217. Cooperative Work Experience-Information Technologies. 3 Credits.**

LECT 3 hrs., LAB 1 hr.

This course provides students in the Department of Information Technologies programs with job training and practical experience in a work environment prior to permanent career employment. This course may be taken in fulfillment of the Computer Information Systems elective. Interested students should consult with the department chair. Computer Information Systems majors only

**Prerequisites:** Permission of department chair

**Corequisites:** CMP-218.

**CMP-218. Cooperative Work Experience Information Technologies - Related Class. 1 Credit.**

LECT 1 hr.

A supplement to the Department of Information Technologies Cooperative Work Experience, this course provides a variety of exercises that further develop the students' technical and communication skills, occupational adjustment, and career planning. This course is offered online. Computer Information Systems majors only.

**Prerequisites:** Permission of department chair

**Corequisites:** CMP-217.

**CMP-230. Computer Architecture and Assembly Language. 3 Credits.**

LECT 3 hrs., LAB 1 hr.

This course is an introduction to computer architecture and assembly language programming. Topics covered include digital logic and data representation, computer architecture and organization, interfacing and input/output strategies, memory architecture, functional organization, and multiprocessing. Students are exposed to basic assembly language programming techniques in laboratory assignments.

**Prerequisites:** CMP-128 or equivalent

**Additional Fees:** Course fee applies.

**CMP-233. Data Structures and Algorithms. 3 Credits.**

LECT 3 hrs., LAB 1 hr.

The course includes advanced computer science topics dealing with logical structures of data and the design and analysis of computer algorithms operating on these structures. The course concentrates on data structures such as linked lists, trees, queues, stacks, hash tables and graphs. Algorithms covered include stacks, queues, hash tables, trees, graphs, heaps, sorting and searching. Both iterative and recursive algorithms are explored with analysis of their efficiency. Problems and computer exercises implementing the above structures and techniques are assigned.

**Prerequisites:** CMP-129 or equivalent and MAT-123 or higher

**Additional Fees:** Course fee applies.

**CMP-235. Advanced UNIX. 3 Credits.**

LECT 3 hrs., LAB 1 hr.

This is a continuation course in UNIX programming with emphasis on building upon the previously developed skills. Topics include an in-depth coverage of shell scripts, system administration, GUIs, differences and similarities between shells, higher-level programming languages in the UNIX environment, the Internet, sorting, and other advanced topics.

**Prerequisites:** CMP-209

**Additional Fees:** Course fee applies.

**CMP-237. Visual Basic (VB.Net). 3 Credits.**

LECT 3 hrs., LAB 1 hr.

This is a fundamental course in object-oriented programming in a Windows environment. Topics include form design, managing controls, handling variables and constants, using decision and loop structures to construct efficient code, handling built-in functions, and simple debugging techniques for detecting errors. Basic fundamentals of classes are introduced.

**Prerequisites:** CMP-128 or equivalent

**Additional Fees:** Course fee applies.

**CMP-239. The Internet and Web Page Design. 3 Credits.**

LECT 3 hrs., LAB 1 hr.

This course is an in-depth study of the Internet and its various services that allows students to appreciate the impact of the Internet in society. Students create World Wide Web home pages using strict Hypertext Markup Language, Cascading Style Sheets (CSS) and XHTML. Other current specifications also are discussed.

**Additional Fees:** Course fee applies.

**CMP-241. Database Programming (Oracle). 3 Credits.**

LECT 3 hrs., LAB 1 hr.

This course uses the rules and syntax of an industrial-strength database programming language that can be used on all types of computers. Topics include relational database aspects, data input and validation, creation and maintenance of files, query, user control center, and application generator. Emphasis is on development of programs related to business database applications.

**Prerequisites:** CMP-113 or equivalent or permission of department chair

**Additional Fees:** Course fee applies.

**CMP-243. Ethical Hacking and Systems Defense. 3 Credits.**

LECT 2 hrs., LAB 2 hrs.

This course combines an ethical methodology with the hands-on application of security tools to better help students secure and defend their systems. Students are introduced to common countermeasures that effectively reduce and/or mitigate attacks. This class is designed to help students prepare for professional careers in the information security field and the Certified Ethical Hacker (CEH) certification exam.

**Prerequisites:** CMP-124

**Additional Fees:** Course fee applies.

**CMP-244. Web Design II. 3 Credits.**

LECT 3 hrs., LAB 1 hr.

This course is a continuation of The Internet and Web Page Design with an emphasis on more advanced concepts and techniques. Topics include Cascading Style Sheets, forms, JavaScript and other current scripting languages. Students learn to work with hosting and web server technology. For their final project, students build a website using these techniques.

**Prerequisites:** CMP-239

**Additional Fees:** Course fee applies.
CMP-245. Web Design Tools. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Students learn the leading web design and development tools including the Adobe Creative Suite. Instruction and practice in the suite provides seamless integration and a unified user interface across all tools to streamline multimedia and web development. Through hands-on practice, activities and relevant project application, students develop competence in the use of industry-leading development tools.
Prerequisites: CMP-108 or CMP-128 or CMP-239 or MED-110 or GRD-111
Additional Fees: Course fee applies.

CMP-246. Operating Systems. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to operating systems and their uses and design concerns. Covered are the roles and responsibilities of operating systems including scheduling, concurrency and process synchronization, memory management, file organization and management, and control of peripheral devices. Security and protection topics are also addressed. Laboratory assignments provide interactive learning experiences which demonstrate operating system concepts using programming, operating system commands and scripting.
Prerequisites: CMP-129
Additional Fees: Course fee applies.

CMP-249. Advanced Web Programming. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in Web Development introduces the student to creating interactive and dynamic Web sites using current Web programming. Building on concepts and principles of computer programming and scripting languages, students will interact with Web server technologies and develop front end, advanced professional Web sites with fully functional back end support.
Prerequisites: CMP-128 and CMP-244
Additional Fees: Course fee applies.

CMP-250. Game Production. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Working in teams, students combine their game design and programming skills to explore the practical challenges of managing the development of games. Industry-standard software and advanced programming are used in this capstone course to develop a functioning game of the highest professional quality. Emphasis is placed on the game design document, storyboarding, the game production process, user interface and game design, interactive storytelling, character development, 3D animation, special effects, audio, the collaborative process, and usability testing.
Prerequisites: CMP-150 or MED-220
Additional Fees: Course fee applies.

CMP-261. Digital Forensics II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This advanced course in digital forensics will enable the student to understand advanced file system forensics, the theory of forensic procedures, review of identification, imaging, and authentication, review of FAT file system, NTFS and EXT3 file systems, partitioning, Window’s logical analysis, email analysis, and web history analysis conducted in a laboratory setting. Upon completion of this course the student will apply investigative methodology as it applies to data artifacts, including where they are found in computer operating systems, and how they are deployed in digital forensics. The student will perform forensic media acquisition and verification.
Prerequisites: CMP-160
Additional Fees: Course fee applies.

CMP-290. Independent Study in Information Technology. 3 Credits.
LECT 3 hrs.
Students, in consultation with the department chair, undertake an in-depth analysis of a selected topic, problem or issue related to information technology or pursue additional computer-related work experience. Students are responsible for developing a statement of goals and strategies, maintaining a weekly log, and preparing a written and oral summary report. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-291. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-292. Special Topics in Information Technology. 3 Credits.
LECT 3 hrs., LAB 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

CMP-293. Special Topics in Information Technology II. 1 Credit.
LECT 1 hr.
An examination of selected topics or issues in information technologies. Topics may differ each time the course is offered. Students should consult the department chair for additional information. Computer Information Systems majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
Courses

CJS-115. Introduction to Security. 3 Credits.
LECT 3 hrs.
The historical, philosophical and legal basis of security. The role of security and the security individual in modern society; the concept of professionalism; and the survey of the administrative, personnel and physical aspects of the security field.

CJS-116. Introduction to Criminology. 3 Credits.
LECT 3 hrs.
The study of crime, crime statistics, theories of crime causation, crime typologies, the impact of crime, limits of criminal law, and society’s reactions to criminal behavior.

CJS-120. Jurisprudence: The Philosophy of Law. 3 Credits.
LECT 3 hrs.
Explores the principles upon which law is based. The course seeks to define, categorize and relate those principles to each other and ascertain not what the law is, but rather why it is, and its capacities and limits.

CJS-121. Criminal Justice System. 3 Credits.
LECT 3 hrs.
A study of the overall system of criminal justice from its early historical development to its evolution within the United States. Identification of various sub-enforcement, courts and corrections; their role expectations and systems and components - law interrelationships; and basic premises of crime, punishment and rehabilitation.

CJS-122. Classics of Criminology. 3 Credits.
LECT 3 hrs.
The goal of this course is to gain an intellectual understanding of criminology by reviewing its progress in the past 20 years. It presents the causes of crime and the effect of crime on society, victims and criminals. A review of the literature is accomplished by investigating sociological, psychological and biological theories of crime.

CJS-124. Introduction to Police Operations. 3 Credits.
LECT 3 hrs.
This course provides the student with an opportunity to observe and interact with the fundamentals of police operations. The student is provided with a basis for resolving everyday operational dilemmas from a proactive and reactive perspective. The course emphasizes the need for officers to think critically and to be creative as they interact with citizens in their communities.

CJS-125. Investigative Function. 3 Credits.
LECT 3 hrs.
Fundamentals of reconstructing a chronological sequence of events as to if, when and how a crime was committed. This includes searching, collecting, preserving, evaluating and cross-comparing physical and oral evidence within the framework of accepted procedural and constitutional laws. Procedures using proven scientific methods and analysis to meet the ideal standards of an investigation to resolve the issue, identify the offenders and professionally present the findings in court are included.

CJS-126. Juvenile Delinquency. 3 Credits.
LECT 3 hrs.
A review of the historical reasons for the establishment of juvenile courts in the United States, an examination of the juvenile justice process, and an introduction to the functions of the various components of the system. Sociological concepts and theory of the adolescent subculture are explored. Delinquency prevention aspects, as well as treatment methodologies, are included.

CJS-128. Policing. 3 Credits.
LECT 3 hrs.
This course focuses on the importance of and strategies for positive police-community interactions and addresses the internal and external communities the police serve. The interdisciplinary approach of the course draws data and discussions from a wide range of disciplines and gives students a well-rounded perspective to help them better recognize the importance of, appreciate, and practice positive police-community relations.

CJS-131. Introduction to Corrections. 3 Credits.
LECT 3 hrs.
An introduction and overview of fundamental process, trends and practices of probation, institutional treatment, parole and contemporary community-based correctional programs. Included is a review of the history and philosophy of corrections, with emphasis on the constitutional rights of offenders.
CJS-225. Probation and Parole. 3 Credits.
LECT 3 hrs.
This course examines the history of the fields of probation and parole, detailing how it moved from a focus on treatment/rehabilitation and the indeterminate sentence, toward a model based on control/law enforcement and the determinate sentence. The course will discuss how the historical changes affected the roles and responsibilities of probation and parole officers. Additional, students will explore the use of cognitive behavior therapy and motivation interviewing, "broken windows"/community-based supervision, and the importance of evidence-based practice.
Prerequisites: CJS-121.

CJS-228. Public Safety Internship/Coop. 3 Credits.
LECT 3 hrs.
This course provides students with an opportunity to obtain practical, real-world experience in the field of public safety. On-site mentors supervise the student throughout their field experience and department faculty serve as the student's advisors. Criminal Justice or Fire Science majors: permission of the department, 2.0 GPA or better and majority of core requirements completed.
Prerequisites: Permission of department chair.

CJS-231. Domestic and International Terrorism. 3 Credits.
LECT 3 hrs.
This course offers an in-depth examination of both Domestic and International Terrorism. Topics include: the history and definitions of terrorism; the motivation behind terrorism, how terrorists fund and plan their operations. Portions of the course will address preparedness and response to terrorism. The course will conclude with current and future issues of terrorism.
Prerequisites: An introductory course in Criminal Justice.

CJS-291. Special Topics in Criminal Justice. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in criminal justice. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Criminal Justice.

CJS-292. Special Topics in Criminal Justice. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in criminal justice. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Criminal Justice.

Dance (DAN)

Courses
DAN-111. Introduction to Dance. 1 Credit.
LAB 2 hrs.
This course is for the student with little or no movement experience and is designed as an introduction to dance as an art form. Foundational techniques of ballet, modern and jazz dance are taught with specific attention to developing awareness of proper anatomical alignment. Dance history, terminology and injury prevention are also integrated into the coursework. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Additional Fees: Course fee applies.

DAN-112. Dance Appreciation. 3 Credits.
LECT 3 hrs.
This course is designed for any student wishing to gain knowledge of the contemporary dance world and its relation to the other arts. Personalities, companies, productions, etc. are explored in the mediums of ballet, modern and musical theatre. Present and future trends in the dance world are emphasized through lectures, videos and live concerts. This is a non-movement lecture course; written assignments and exams are given and attendance at concerts is required.

DAN-117. Introduction to Ballet. 1 Credit.
LAB 2 hrs.
This course is for the student with little or no movement experience and is designed to introduce the tap dance genre. Specific attention is given to developing the skills necessary to articulate the feet as well as the specific body carriage that accommodates rhythmic footwork. Classes include basic warm-up exercises and combinations along with lecture, demonstrations and videos. Students spend additional time in the studio to satisfy course time requirements. (Students need to provide their own tap shoes.) This course is open to non-dance majors as well as dance majors.
Additional Fees: Course fee applies.

DAN-125. Jazz I. 1 Credit.
LAB 2 hrs.
This course is for the student at a beginning experience level and is designed to introduce the jazz dance genre. Specific attention is given to exploring rhythms, body isolations and stylistic movements specific to jazz dance. The techniques of ballet and modern dance are integrated into the coursework and anatomical alignment is stressed for the purpose of injury prevention. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Additional Fees: Course fee applies.

DAN-126. Jazz II. 1 Credit.
LAB 2 hrs.
This course is for the student at an intermediate experience level and is a continuation of Jazz I. More advanced movements including greater intricacy and faster rhythms are taught. Students synthesize these movements into choreographed jazz dance sequences. Specific attention is given to the development of style and theatricality. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-125 or permission of department chair
Additional Fees: Course fee applies.

DAN-130. Tap Dance I. 1 Credit.
LAB 2 hrs.
This course is for students at a beginning experience level and is designed to introduce the tap dance genre. Specific attention is given to developing the skills necessary to articulate rhythmic sounds with the feet as well as the specific body carriage that accommodates rhythmic footwork. Classes include basic warm-up exercises and combinations along with lecture, demonstrations and videos. Students spend additional time in the studio to satisfy course time requirements. (Students need to provide their own tap shoes.) This course is open to non-dance majors as well as dance majors.
Additional Fees: Course fee applies.
DAN-131. Tap Dance II. 1 Credit.
LAB 2 hrs.
This course is for the student at an intermediate experience level and is a continuation of Tap Dance I. It is designed to more fully integrate the entire dancing body while developing more advanced footwork. Classes include intermediate warm-up exercises and traveling combinations along with lecture, demonstrations and videos. Students spend additional time in the studio to satisfy course time requirements. (Students need to provide their own tap shoes.)
Prerequisites: DAN-130 or permission of department chair
Additional Fees: Course fee applies.

DAN-132. Ballet I. 2 Credits.
LAB 4 hrs.
This course is for the student at a beginning experience level and is a continuation of Ballet I. It is designed to more fully develop the skills necessary for classical ballet. Continued emphasis is given to pirouettes, petit and grand allegro jumping as well as utilizing transitional steps in longer enchainment. Discussion of ballet companies, significant ballet personalities and injury prevention are also integrated into the coursework. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-131 or permission of department chair
Additional Fees: Course fee applies.

DAN-133. Dance Theatre Workshop I. 1 Credit.
LAB 2 hrs.
Dance Majors only. This course is designed for the student interested in dance production. The course involves publicity work, costuming, design, auditions, rehearsals and possible performance. Practical experience is gained by participating in concerts at County College of Morris, on stage and/or backstage. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DAN-134. Dance History. 3 Credits.
LECT 3 hrs.
This course follows the historical development of dance from the movement of prehistoric humans to the theatrical dancing of the 21st century. Videos and examples of dance styles are used to exemplify the different periods of dance development. Written examinations, research papers, projects and attendance at dance concerts are required.
Additional Fees: Course fee applies.

DAN-135. Dance Theater Workshop II. 1 Credit.
LAB 2 hrs.
Dance Majors only. This course is designed for the student interested in dance production. It is a continuation of Dance Theatre Workshop I and serves as a vehicle for active participation in the County College of Morris Dance Theatre. Students earn credit by contributing to the productions through publicity work, budgeting, ticketing, programming, backstage lighting work and/or performing and presenting original student works. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-134 or permission of department chair
Additional Fees: Course fee applies.

DAN-136. Modern Dance I. 2 Credits.
LAB 4 hrs.
This course is designed to develop the technical physical skills necessary for modern dance. The emphasis is on developing the body as an articulate instrument for expressing contemporary art through dance. Specific attention is given to the movements of the spine, arms and legs while maintaining anatomical alignment. Stationary floor exercises, movement phrases across the floor and movement improvisation are given. Discussion of modern dance companies, significant modern dance personalities and injury prevention are also integrated into the coursework. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DAN-137. Ballet II. 2 Credits.
LAB 4 hrs.
This course is for the student at a low intermediate experience level and is a continuation of Ballet I. Emphasis is on creative explorations of movement already learned. Specific attention is given to more advanced use of the spine and development of core muscle strength. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-136 or permission of department chair
Additional Fees: Course fee applies.

DAN-138. Modern Dance II. 2 Credits.
LAB 4 hrs.
This course is for the student at a low intermediate experience level and is a continuation of Modern Dance I. Emphasis is on creative explorations of movement already learned. Specific attention is given to more advanced use of the spine and development of core muscle strength. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: DAN-141 or permission of department chair
Additional Fees: Course fee applies.

DAN-139. Dance History. 3 Credits.
LECT 3 hrs.
This course is designed to develop the technical physical skills necessary for classical ballet. Specific attention is given to the proper execution of barre and center exercises, anatomical alignment, and stretching and strengthening of specific muscle groups. Pirouettes, allegro jumping, transitional steps and ports de bras are taught. Formal body positions, spatial directions and classical ballet terminology are taught. Discussion of ballet companies, significant ballet personalities and injury prevention are also integrated into the coursework. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements. This course is open to non-dance majors as well as dance majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
DAN-211. Intermediate Ballet. 3 Credits.
LAB 6 hrs.
This course is for the student at the intermediate experience level and designed to continue the development of technical physical skills necessary for classical ballet. It builds upon the technical proficiencies achieved in Ballet I and II. Specific attention is given to more advanced footwork in allegro jumping, sustained movement in adagio exercises and more advanced pirouettes. Emphasis is given to developing style, theatrical quality and proper anatomical alignment. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-138 or permission of department chair
Additional Fees: Course fee applies.

DAN-212. Advanced Ballet. 3 Credits.
LAB 6 hrs.
This course is for the student at the advanced experience level and is a continuation of Intermediate Ballet. Specific attention is given to developing performance quality and audition techniques. This course is recommended for those students wishing to transfer into a four-year degree program in dance or those seeking a career in dance performance or instruction. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-211 or permission of department chair
Additional Fees: Course fee applies.

DAN-216. Intermediate Modern Dance. 3 Credits.
LAB 6 hrs.
This course is for the student at the intermediate experience level and is designed to continue the development of the technical physical skills necessary for modern dance. It builds upon the technical proficiencies achieved in Modern I and II. Emphasis is on creative movement and choreography, intricate combinations and movement for the stage. New techniques of contemporary artists are discussed and explored, with emphasis on technical mastery. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-142 or permission of department chair
Additional Fees: Course fee applies.

DAN-217. Advanced Modern Dance. 3 Credits.
LAB 6 hrs.
This course is for the student at the advanced experience level and is a continuation of Intermediate Modern Dance. Specific attention is given to developing the dancing body in intricate combinations of creative movement and choreography. Emphasis is on performance quality and audition techniques. This course is recommended for those students wishing to transfer into a four-year degree program in dance or those seeking a career in dance performance or instruction. Written and practical assignments are given. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-216 or permission of department chair
Additional Fees: Course fee applies.

DAN-220. Dance Theatre Workshop III. 1 Credit.
LAB 2 hrs.
This class continues to develop the student as a performer, choreographer and/or backstage production artist. It is a continuation of Dance Theatre Workshop II and serves as a vehicle for active participation in the County College of Morris Dance Theatre. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-136 - Dance Majors Only
Additional Fees: Course fee applies.

DAN-222. Dance Theatre Workshop IV. 1 Credit.
LAB 2 hrs.
This class is the culmination of the dance student's participation in the County College of Morris Dance Theatre productions and a continuation of work done in Dance Theatre Workshop III. All aspects of dance production are covered with special emphasis on stage lighting. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-220 - Dance majors only
Additional Fees: Course fee applies.

DAN-224. Choreography I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course focuses on both individual and group creativity of new movement phrases using improvisation and other choreographic tools leading to actual compositions by the students. Movement and written assignments are given and student and professional choreography are viewed. Students spend additional time in the studio to satisfy course time requirements.
Prerequisites: DAN-141
Additional Fees: Course fee applies.

DAN-225. Choreography II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course continues to explore elements of creative dance learned in Choreography I. Musical interpretation, narrative, prop studies, etc. are stressed. Completed movement phrases leading to actual choreographed dances are developed and considered for the stage. Costuming, lighting and preparation for actual presentation are emphasized. Movement and written assignments, with a final presentation, are required. Students spend additional time in a laboratory setting as part of the course.
Prerequisites: DAN-224
Additional Fees: Course fee applies.

DAN-230. Dance Internship. 1 Credit.
LAB 2 hrs.
Dance Majors only. This course enables the student to complete on- or off-campus work/study in the dance field related to the student's goals as a dance major. Experience is gained in the dance field workforce as a dancer, choreographer, instructor or pre-approved dance program off-campus or dance administrative work on or off campus. The work experience is documented by the student and overseen by the professor. Recommendations are given to prospective employers by the faculty observer. This class should be taken in the student's final semester.
Prerequisites: Permission of department chair.
Courses

DSN-110. History of Design. 3 Credits.
LECT 3 hrs.
The History of Design is a survey of major developments of design as well as the methodology and cultural influences which impact particular designs. The nature, function and evolution of design are studied through innovations in the architectural, interior, industrial, decorative and fashion design realms. The development of concepts, their relationship to the historical and cultural movements, and the impact on surrounding art and design communities will be explored.

DSN-115. Basic Drafting. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Basic Drafting is a beginner's course that provides a solid foundation for all design and engineering courses. The study of materials and techniques in this course introduces students to the many forms of graphical communication and how best to convey their ideas in a graphical form. Many techniques are explored from pencil on vellum to pen on Mylar with furthering rendering techniques studies modified to focus on the individual's course direction.

DSN-120. Design Concepts I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Design Concepts I is a detailed exploration of scale and proportion through two- and three-dimensional sketch problems varying in levels of complexity and duration. Projects explore relationships between historical and cultural special systems and the relationship to the human proportion. Verbal and graphic communication skills are emphasized as a method of articulating the development of visual concepts and solutions to design problems. Communication tools such as perspective are explored in detail. Projects, which include architectural, interior design, fashion and industrial design are reviewed through juried presentations.
Prerequisites: ART-122, ART-130
Additional Fees: Course fee applies.

DSN-125. Design Rendering. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Design Rendering is an advanced-level studio course that builds on the work completed in Drawing I and II. It is especially geared for students majoring in Design. The course concentrates on producing virtual product, fashion, architecture and interior images through the means of controlled light. Emphasis is placed on setting up proper perspective and generating a line drawing as an underlay. Color marker techniques are stressed as well as color pencil. In addition, pen and ink techniques and water color are explored. Students are introduced to 3D computer modeling. At the end of the course, each student has a collection of portfolio quality renderings that demonstrate a high level of competence in a chosen field of design.
Prerequisites: DSN-120, ART-122, ART-130
Additional Fees: Course fee applies.

DSN-130. Design Rendering II. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course takes a hands-on approach to the development, construction and presentation of fashion apparel, custom made clothing and costuming for stage and screen. Construction techniques, fabrics, tools and equipment are explored in detail in the classroom and the community. Draping as a means of design and basic pattern drafting are explored. Students develop the skills necessary to construct and present projects of their own design to a panel of their peers and professionals.
Additional Fees: Course fee applies.

DSN-135. Fashion Construction Technology I. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course explores the interrelationship between the consumer and the various sectors of the fashion industry. Students learn the principles and techniques that fashion merchandisers use in making key decisions on buying and product sourcing, store planning and layout. Students review actual case studies and take on projects that engage the merchandising planning and decision-making process. This course is highly recommended for design and business students with interest in fashion merchandising and store plan layout.
Prerequisites: ART-122, ART-130, ENG-111 or permission of department chair
Corequisites: DSN-120
Additional Fees: Course fee applies.

DSN-140. Fashion Design Technology. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course takes the student through the design and development phases of the apparel construction process. The course is designed to be a hands-on laboratory in the design and development of fashion apparel. Students will work through both theoretical and practical aspects of the design process. The course will take students from the initial stages of idea development to final presentations of their garment designs.
Prerequisites: DSN-120, DSN-135, DSN-160
Additional Fees: Course fee applies.

DSN-145. Introduction to Fashion and Visual Merchandising. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course explores the interrelationship between the consumer and the various sectors of the fashion industry. Students learn the principles and techniques that fashion merchandisers use in making key decisions on buying and product sourcing, store planning and layout. Fashion as a retail component is also discussed. Students review actual case studies and take on projects designed to enhance their comprehension of the subject. Course introduces math as an applied principal to merchandising.
Prerequisites: DSN-145
Additional Fees: Course fee applies.

DSN-146. Fashion Merchandising II. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course takes an in-depth look at the business of fashion. Students learn about the retail environment, store planning and layout. Students review actual case studies and take on projects designed to enhance their comprehension of the subject. Course introduces math as an applied principal to merchandising.
Prerequisites: DSN-145
Additional Fees: Course fee applies.

DSN-150. Clothing Design Technology. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course takes a hands-on approach to the development, construction and presentation of fashion apparel, custom made clothing and costuming for stage and screen. Construction techniques, fabrics, tools and equipment are explored in detail in the classroom and the community. Draping as a means of design and basic pattern drafting are explored. Students develop the skills necessary to construct and present projects of their own design to a panel of their peers and professionals.
Prerequisites: DSN-120, DSN-135, DSN-160
Additional Fees: Course fee applies.

DSN-155. Costume Design and Construction. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This is a course in advanced sewing techniques that builds on skills developed in Fashion Construction Technology I and II. With costume design, construction and creative problem-solving serving as the base, students learn advanced techniques in haute couture tailoring and further develop their designed fashion lines and portfolios.
Prerequisites: DSN-120, DSN-135, DSN-160
Additional Fees: Course fee applies.

DSN-160. Fashion Construction Technology II. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This advanced course in fashion construction techniques concentrates on the details that set couture sewing apart from ready-to-wear and standard home sewing. The student explores hand-detailed sewing, speed techniques and embellishment while improving their skills in construction. Basic sewing knowledge is a must for this class.
Prerequisites: DSN-135 or permission of department chair
Additional Fees: Course fee applies.
DSN-165. Drawing for Designers. 3 Credits.
LECT 1 hr., LAB 4 hrs.
A studio course that introduces the design student to the many techniques of drawing desired as a design professional. The course explores perspective, line quality and the graphic visualization process as well as method, materials and subject matter. Students learn to use rapid visualization skills in solving complex design problems.
Prerequisites: ART-122
Additional Fees: Course fee applies.

DSN-219. Advanced CAD 3D Modeling. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Upon completing CAD I and CAD II, students are next expected to acquire advanced skills in 3D modeling. This course expands on the lessons learned in CAD I and II and teaches the students valuable skills that are critical to the product and build environments. Working with advanced digital imaging software like Adobe Revit and 3D Studio Max, students learn to generate modeled images with a critical determination.
Prerequisites: ENR-117, ENR-118, DSN-120.

DSN-220. Design Concepts II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Design Concepts II is a continuation of Design Concepts I through projects focusing on the design methodology of problem solving. Projects explore issues through sketches and three-dimensional scaled models of products and spaces. Students are expected to draw from their total design, visual and technical experiences in the development and communication of visual concepts. Projects include architectural, industrial design, interior design and fashion. Project work will be reviewed through juried presentations. The role of CAD as a design tool is introduced.
Prerequisites: DSN-120
Additional Fees: Course fee applies.

DSN-234. Independent Study in Design. 1-3 Credits.
LECT 3 hrs.
This course provides an opportunity for selected students to participate in independent work under close supervision of a Design faculty member. Interested students should make their interest known to the department chair early in the prior semester. The chair will determine criteria for selection.
Prerequisites: Permission of department chair.

DSN-255. Fashion Design Computer. 3 Credits.
LECT 1 hr., LAB 4 hrs.
Fashion Design and Fashion Merchandising students learn to design fashion garments and generate fashion promotional utilizing the computer and advanced digital imaging software. Adobe Illustrator and Photoshop are utilized along with other modeling programs.
Prerequisites: DSN-120 or permission of department chair.

DSN-291. Special Topics in Design I. 3 Credits.
LECT 1 hr., LAB 4 hrs.
The Special Topics in Design I course allows for the insertion of relevant but unscheduled courses into the curriculum. The course content includes specific technical or aesthetic topics that have both a lecture and a laboratory (studio) component in an area of Design.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DSN-292. Special Topics in Design II. 3 Credits.
LECT 1 hr., LAB 4 hrs.
The Special Topics in Design II course allows for the insertion of relevant but unscheduled courses into the curriculum. The course content includes specific technical or aesthetic topics that have both a lecture and a laboratory (studio) component in an area of Design.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

DSN-293. Special Topics in Design III. 3 Credits.
LECT 3 hrs.
The Special Topics in Design III course allows for the insertion of relevant but unscheduled courses into the curriculum. The course content includes specific technical or aesthetic Design topics that may be delivered in a lecture format.
Prerequisites: Permission of department chair.

Drama (DRA)

Courses

DRA-110. Acting I. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course concentrates on the basic principles of acting. Students are expected to apply these principles in frequent exercises, mimes, improvisations and at least four major roles.

DRA-112. Acting II. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
An advanced course in acting with emphasis on scene work. Students are responsible for the rehearsal, presentation and written analysis of six scenes.
Prerequisites: DRA-110 or permission of department chair.

DRA-114. The Drama Workshop. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an introduction to the major elements of play production, both onstage (improvisation, mime, acting) and backstage (set design, costuming, makeup). These skills are investigated through in-class exercises and culminate in the presentation of a short scene.

DRA-116. Dramatic Performance I. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-118. Dramatic Performance II. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theatre. Students participate as actors, technicians and crew members.

DRA-210. Acting III. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
An advanced course that applies the scene study techniques from Acting II to roles from the classical repertoire. Students present scenes from Greek tragedy, Shakespeare, Commedia dell’Arte, as well as representative scenes from modern and contemporary theatre. A written scene analysis is required for each presentation.
Prerequisites: DRA-110 and DRA-112.
DRA-213. Acting IV. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course focuses on advanced scene work as well as the practical aspects of life as a working actor. Auditioning, landing a role, preparing resumes and head-shots, finding agents, etc. are some of the topics discussed.

DRA-216. Dramatic Performance III. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-218. Dramatic Performance IV. 1 Credit.
LECT 1 hr.
The study of the various components of play production resulting in the mounting of a full-scale drama or comedy taken from both the classical and contemporary theater. Students participate as actors, technicians and crew members.

DRA-220. Voice for the Actor. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course develops the student's awareness of the vocal mechanism through the use of the Linklater approach. The focus of this course is in feeling and experiencing the voice and how it works. Each student participates in a Master Class situation.

DRA-222. Movement for the Actor. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an experiential creative workshop based on Laban Movement Analysis to develop the performer's movement, description, observation and performance skills.

DRA-224. Introduction to Technical Theatre. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course takes a hands-on approach to all the steps required to mount a full production: set design and set construction, lighting, sound and special effects. Students are required to work as members of the various technical crews for the main-stage productions during the semester.

DRA-229. Directing. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is designed to acquaint students with the basic function and the importance of the director in theatre, simultaneously providing them with the opportunity for practical, creative, hands-on directing experience. Class work includes lecture, discussion, and the directing of a number of short scenes and the preparation of a professional promptbook.
Prerequisites: DRA-114.

DRA-231. Internship in Theatre Arts. 3 Credits.
LECT 3 hrs.
The County College of Morris/Shakespeare Theatre of New Jersey at Drew University Internship enables students to apply classroom theatre knowledge to a supervised practical experience in a professional theatre. Internship requirements of a minimum of 150 hours are met through significant participation in the backstage, production, stage and house management of the Shakespeare Theatre, with the opportunity to audition for activities onstage. Students are required to participate in three different capacities in three Shakespeare Theatre productions during the semester.
Prerequisites: DRA-110, DRA-116 and DRA-114 or DRA-224; Minimum 2.0 grade point average; permission of department chair
Corequisites: DRA-232.

DRA-232. Internship/Theatre Arts - Related Class. 1 Credit.
LECT 1 hr.
A related class designed to supplement the student’s work experience. Weekly meetings include discussion, written assignments and critical analysis of the internship experience.
Prerequisites: DRA-110, DRA-116 and DRA-114 or DRA-224; Minimum 2.0 grade point average; permission of department chair
Corequisites: DRA-231.

Early Childhood Education (CDC)

Courses

CDC-110. Early Childhood Development. 3 Credits.
LECT 3 hrs.
This course focuses on the growth and development of the child, birth through age 8. Special emphasis is placed on cognitive, language, physical, social and emotional development. It covers a variety of factors that influence child development. The objectives of this course are for the student to understand that a variety of factors influence the behavior of the child. In understanding the capability of the developing child, the early childhood teacher will be better enabled to provide the child with appropriate care. A field work component includes observations of children's behavior in an early childhood setting. The purpose is to understand the need for goals, helping the child achieve these goals and providing for individual differences.

CDC-228. Cooperative Work Experience- Child Care. 3 Credits.
COOP 3 hrs.
This course provides selected students in the Early Childhood programs with job-oriented training and practical experience in a work environment. Students desiring to participate in this experience should make this intention known to the faculty advisor at the beginning of their third semester.
Prerequisites: ENG-111, ENG-118, MUS-129, PSY-113, PSY-213, PSY-217, SOC-120, SOC-209
Corequisites: CDC-229.
CDC-229. Cooperative Work Experience-Child Care - Related Class. 1 Credit.
LECT 1 hr.
A supplement to the cooperative work experience program, this course provides a variety of experiences to further enhance students' career development and occupational development. It also develops positive points of view toward human relationships and the responsibilities of both the employee and the employer.
Prerequisites: ENG-111, ENG-118, MUS-129, PSY-113, PSY-213, PSY-217, SOC-120, SOC-209
Corequisites: CDC-228.

Economics (ECO)

Courses

ECO-113. Elements of Economics. 3 Credits.
LECT 3 hrs.
For Career Option Students. This is a one semester course that combines abstract principles, simple geometric approaches, applied problems and their analysis for those students seeking an understanding of some fundamental economic principles and laws. This understanding is enhanced by exploring the mechanics, operations and usefulness of economics to consumer, businesses, governments, both nationally and internationally.
Prerequisites: MAT-011 or equivalent.

ECO-120. Economics and Economic Issues. 3 Credits.
LECT 3 hrs.
This course combines economic principles with applications to contemporary problems. Emphasis is placed on using economic concepts to analyze and understand social, political, philosophical and diversity issues. This course is a social science elective.

ECO-211. Principles of Economics I Macroeconomics. 3 Credits.
LECT 3 hrs.
Macroeconomics is the study of aggregate economic behavior. National income, employment, price stability and economic growth are analyzed. Fiscal and monetary policies to alleviate inflation and unemployment are also studied.
Prerequisites: MAT-016 or equivalent.

ECO-212. Principles of Economics II Microeconomics. 3 Credits.
LECT 3 hrs.
Microeconomics is the study of prices and markets. Product and resource markets under competitive and non-competitive conditions are analyzed. Behavior of the firm in the determination of price, output and employment of the factors of production is examined. This course includes an introduction to international economics.
Prerequisites: ECO-211.

ECO-217. Economics of Labor. 3 Credits.
LECT 3 hrs.
Labor economics analyzes the structure and performance of the market for labor and public policy as it affects the employment and remunerations of labor. Among the many multifaceted issues that may be explored are: demand for labor, supply of labor, employment and unemployment, inflation and wages, effects of unions on wages and employment, wage differentials, discrimination in the labor market, human capital theory, migration, job search, and the effects of international trade on domestic output, employment and wages.
Prerequisites: ECO-211
Corequisites: ECO-212.

ECO-291. Special Topics in Economics. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in economics. Topics may differ each time the course is offered. Students should consult the department chairperson for further information. This course is not offered every semester.

ECO-292. Special Topics in Economics. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in economics. Topics may differ each time the course is offered. Students should consult the department chairperson for further information. This course is not offered every semester.
Prerequisites: Permission of department chair.

Education (EDU)

Courses

EDU-111. Teaching in America. 3 Credits.
LECT 3 hrs.
This course presents the historical and philosophical foundations of American education and how they relate to contemporary issues facing teachers in America today. The goal is to provide students with a comprehensive understanding of the development of the teaching profession including both its roots and modern-day direction. The course offers theoretical and practical learning experiences including 5 hours of field experiences in public schools.
Prerequisites: All basic skills/remediation in English must be completed. Permission of department chair, Cumulative GPA of 3.0 or higher
Corequisites: PSY-113.

EDU-211. Behavior Observation in Education. 3 Credits.
LECT 3 hrs.
This course uses weekly seminars and 20 hours of field experience in public schools to integrate theory and classroom observations in order for prospective teachers to understand curriculum development and instructional methods. Aspiring teachers learn how to use descriptive research methods to gain insight into the instructional needs of learners by observing them in their natural classroom settings. Armed with this experiential knowledge, students use the seminar to report and discuss their observed findings, as well as relate this practical information to the theories of curriculum development and instructional strategies.
Prerequisites: EDU-111, PSY-113 and permission of department chair, Cumulative GPA of 3.0 or higher
Corequisites: PSY-217.
Electronics Engineering Technology (ELT)

Courses

ELT-110. Digital Principles. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course develops the fundamentals of the binary system. Circuit implementation from Boolean functions and map minimization. Course includes study of combinational logic, sequential logic circuits, flip-flops, counters and shift register. The laboratory allows the student to apply theory to practical digital circuits.
Additional Fees: Course fee applies.

ELT-115. Active Circuit Components. 3 Credits.
LECT 2 hrs., LAB 4 hrs.
This course introduces the behavior of semiconductor electronic devices and develops the device characteristics. Some DC and AC circuit theory is expanded upon so that the active devices can be properly analyzed. Biasing techniques and models of amplifier configurations are stressed for the bipolar transistor and field effect devices. Diodes, rectifiers, filtering and switching circuit applications are studied. Laboratory includes the verification of device characteristics and the testing of basic amplifier and switching configurations.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ELT-121. Circuit Analysis. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course introduces the student to both DC and AC circuit theory. It includes Ohm's and Kirchoff's laws for analysis of series and parallel circuits. Computer circuit simulation of series-parallel, ladder and bridge networks in both DC and AC are analyzed. Resonance and frequency response are included along with some discussion of AC power and transformers. The laboratory experiments are designed to support the theory and obtain measurement skills.
Prerequisites: MAT-110 or equivalent and ENR-124
Additional Fees: Course fee applies.

ELT-123. Studio Maintenance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
For Music Recording majors only. This course provides students an introduction to music studio electronics. Basic skills of working with electronic components are covered, including soldering, the use of electronic measuring equipment and troubleshooting procedures. Studio cabling and infrastructure are dealt with extensively. Various wiring schemes and grounding techniques are examined to give the student an understanding of the typical music studio layout found in the professional environment. This course is for Music Recording majors only and does not serve as a technical elective for the Electronics Engineering Technology major. This course is offered in the Fall and Spring semesters.
Prerequisites: MUS-165
Additional Fees: Course fee applies.

ELT-200. Biomedical Electronics. 3 Credits.
LECT 3 hrs.
This course is the study of the techniques and theory behind the instrumentation utilized in hospital and health-related laboratory work. Emphasis is placed on physiological signals derived from the body and the problems and safety issues associated with their measurement. Demonstrations are conducted in class.
Prerequisites: ELT-115 and ELT-201.

ELT-201. Electricity and Electronics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is a fundamental study of electricity and electronics for Engineering Technology majors. The principles of electrical components and circuits are studied in class and laboratory. Topics include DC, AC series and parallel circuits, transformers and power supplies, solid state amplifiers and control components. The laboratory enables the student to apply the theory discussed in class and to gain some proficiency in the use of electronic measuring equipment.
Prerequisites: MAT-110 or equivalent and ENR-124
Additional Fees: Course fee applies.

ELT-209. Advanced Digital and Microprocessors. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is an extension of digital theory into the operation and interfacing of microprocessors. Major topics include sequential logic design, memory organization, microprocessor architecture, machine level programming, A/D and D/A conversion, and serial and parallel interfacing. An associated laboratory provides for hands-on microprocessor interfacing and the use of logic analyzers.
Prerequisites: ELT-110 and ENR-120 or CMP-128
Additional Fees: Course fee applies.

ELT-200. Electronic Fabrication. 1 Credit.
LAB 3 hrs.
This course provides students with an opportunity to learn about the process involved in the fabrication of electronic circuit boards. Using computer-aided drafting tools, students create an electronic component layout and necessary art work for the construction of a printed circuit board. Students are introduced to project management concepts and techniques, soldering, test specifications and printed circuit board construction. A term project or a series of smaller projects enables students to manage, build and assemble a printed circuit board and develop test specifications.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ELT-213. Active Circuit Design. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers analysis and design of solid-state amplifiers using bipolar and field effect transistors. Topics include frequency response using Bode plots and feedback analysis as applied to operational amplifiers and oscillators. Laboratory verification includes transistors, amplifiers, power amplifiers, IC operational amplifiers and oscillators.
Prerequisites: ELT-115 and either ELT-121 or ELT-201
Additional Fees: Course fee applies.
ELT-215. Industrial Electronics. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers operational amplifiers in linear, non-linear and active filter applications, pulse and wave-shaping techniques, power supplies and regulators, thyristor control of power and transducers. The laboratory includes experiments in design and tests to support the above topics.
Prerequisites: ELT-209 and ELT-115
Additional Fees: Course fee applies.

ELT-227. Biomedical Clinical Experience. 3 Credits.
LECT 3 hrs.
This course provides the student with a 200-hour internship at a local hospital. The student assists in the maintenance and calibration of biomedical electronic equipment. The student must abide by any rules and regulations stipulated in the affiliation agreement with the partnering hospital. As a minimum, the student is required to purchase liability insurance and agree to a criminal background check.
Prerequisites: ELT-200 and permission of department chair
Additional Fees: Course fee applies.

ELT-230. Optoelectronics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers principles of light and linear optics characteristics of electro-optical light sources and detectors and their applications in industry, displays and communication (fiber optics). Lab experiments demonstrate electro-optical measurements and designs of typical applications of electro-optical devices.
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ELT-231. Electronic Communication Systems. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers A.M., F.M., and single side-band communication systems, including an introduction to digital transmission. Designed to familiarize the student with transmitters, receivers, modems, noise analysis, information theory, pulse modulation, sampling, coding, multiplexing and other signal processing techniques used in commercial broadcasting and data transmission systems. The course includes some coverage of transmission lines, antennas, microwaves and satellites. Includes laboratory work involving communication system components and techniques using industrial grade equipment.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ELT-239. Cooperative Work Experience Electronics Engineering Technology. 3 Credits.
This course provides a field experience in the laboratory facilities of an industrial firm. The course is designed for students in the Electronics Engineering Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Students must have completed 35 credits to enroll.
Prerequisites: Permission of department chair.

ELT-291. Special Topics in Electronics Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ELT-292. Special Topics in Electronic Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides an examination of selected topics or issues in Electronics Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

English for Speakers of Other Languages (ESL)

Courses

ESL-010. ESL Reading I. 4 Credits.
LECT 4 hrs.
This course introduces ESL students to basic reading skills and academic vocabulary needed to manage college-level texts. The texts examine aspects of American culture with an emphasis on the college experience. Students are expected to respond to texts with discussions and writing.
Prerequisites: Appropriate placement test scores.

ESL-017. ESL Writing I. 8 Credits.
LECT 8 hrs.
This course introduces students to basic grammar, sentence structure, vocabulary and American English writing conventions with emphasis on the paragraph. Listening comprehension, speaking, reading and writing are reinforced and practiced.
Prerequisites: Appropriate placement test scores.

ESL-019. ESL Reading II. 4 Credits.
LECT 4 hrs.
This course furthers the reading skills introduced in ESL Reading I. The course texts enhance cultural awareness and prepare ESL students to comprehend college-level texts in English. Students also continue to develop their academic vocabulary.
Prerequisites: ESL-010 or appropriate placement test scores.

ESL-020. ESL Writing II. 8 Credits.
LECT 8 hrs.
This course expands the grammatical and writing skills introduced in ESL Writing I. It presents narrative and descriptive short compositions and more complex sentence structure and grammar. Grammar topics include major tenses, gerunds, infinitives, passives, relative clauses, modals and noun clauses.
Prerequisites: ESL-017 or appropriate placement test scores.

ESL-021. Conversational English. 3 Credits.
LECT 3 hrs.
This course provides ESL students with the basic for effective verbal communication in the academic setting. Students learn American English pronunciation, basic presentation skills and idiomatic expressions to prepare for participation in the college classroom.
Prerequisites: Appropriate placement test scores.
ESL-022. Advanced Conversational English. 3 Credits.
LECT 3 hrs.
This course furthers the skills introduced in Conversational English. Students learn grammar, idioms which focus on classroom communication, and American English pronunciation to advance their presentation skills.
Prerequisites: ESL-021 or appropriate placement test scores.

ESL-033. Writing III. 6 Credits.
LECT 6 hrs.
This course advances students' academic writing skills in English by refining essay structure for narrative and descriptive essays and improving knowledge and use of standard English grammar rules, mechanics and punctuation. Topics include major tenses, gerunds, infinitives, passives, articles, sentence structure, parallelism, subject-verb agreement, commas and apostrophes. Students who pass ESL-033 exit the ESL program.
Prerequisites: ESL-020 or appropriate placement test score.

ESL-040. ESL Writing Review. 1 Credit.
LECT 1 hr.
This is an intensive review course for ESL-033 students who need to strengthen their academic English skills before exiting the ESL program. The course focuses on problematic areas of English language usage and helps students to remedy deficiencies in these areas. Students are placed in this course upon the recommendation of the ESL-033 instructor and with permission of the department chair. Recommendations are based on diligence and fulfillment of course requirements.
Prerequisites: ESL-033 and permission of department chair.

Engineering Science and Engineering Technology (ENR)

Courses

ENR-103. Basic Engineering Graphics I. 1 Credit.
LAB 3 hrs.
Students learn fundamentals of engineering drawing through freehand sketching. Course includes developing orthographic views including auxiliary views, dimensioning, sectioning, tolerancing, threads, fasteners, springs and assembly drawings. Course includes creation of pictorial drawings.

ENR-117. Computer-Aided Drafting I. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is an introduction to the concepts and operation of engineering drawing preparation using CAD (computer-aided drafting). The emphasis is on how CAD can reduce drawing time and improve accuracy. Students learn to use the AutoCAD software program to prepare drawings.
Additional Fees: Course fee applies.

ENR-118. Computer-Aided Drafting II. 2 Credits.
LECT 1 hr., LAB 4 hrs.
This course is a continuation and enhancement of Computer-Aided Drafting I. Topics include prototype drawings, blocks, attributes, x-reference, grips, paper space and development of 3-dimensional solid modeling.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-119. Technical Computer Applications. 1 Credit.
LAB 3 hrs.
This course provides an introduction to the various technical tools available to help solve problems in the field of engineering technology. This is a hands-on laboratory course designed to provide students with experience in using scientific calculators, Windows Operating System, Microsoft Office and Internet search tools. Special emphasis is placed on the development of technical reports using Microsoft Office's EXCEL and Word programs.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

ENR-120. Technical Computer Programming. 2 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an introduction to computer programming with application to engineering technology. Microcomputers are used to develop application programs in a programming language.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

ENR-121. Engineering Graphics. 2 Credits.
LECT 1 hr., LAB 3 hrs.
This course is an introduction to computer aided design software and hardware. Covered are geometric constructions, multiview orthographic projection, dimensioning, sectioning, auxiliary view and axonometric projection and principles of descriptive geometry. A brief introduction to solid modeling is also included. This course is intended for Engineering Science students; Engineering Technology students take ENR-117.
Prerequisites: MAT-123
Additional Fees: Course fee applies.

ENR-123. Introduction to Engineering. 1 Credit.
LECT 1 hr.
This course provides the entering engineering student with an overview of the engineering profession and the design process. Topics discussed include the engineering course of study, academic advisement and transfer processes, types of engineering disciplines, problem-solving techniques, typical software tools, reporting techniques, and study skills.

ENR-124. Instrumentation and Measurements. 2 Credits.
LECT 1 hr., LAB 3 hrs.
This course is an introductory study in the concepts involving physical measurements utilizing hands-on electrical and mechanical measurement applications. Use of basic instruments and transducers, accuracy and precision, units and standards of measurements, accounting and presentation of errors in measurements.
Prerequisites: MAT-007 or equivalent
Corequisites: ENR-119
Additional Fees: Course fee applies.

ENR-125. Computer Programming for Engineers. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
A course in structured and object-oriented programming, emphasizing engineering applications and numerical methods in assignments. Program assignments are coded and are implemented on personal computers.
Prerequisites: MAT-123
Additional Fees: Course fee applies.
ENR-126. Computer Aided Design and Applications. 2 Credits.
LECT 1 hr., LAB 4 hrs.
An introductory course in computer aided design using parametric solid modeling software. Creation of solid models of parts, generation of orthographic views, sectional views and auxiliary views are covered. Dimensioning and tolerancing of parts is emphasized along with development of appropriate files to make the parts for product development using rapid prototyping (3-D printing) and to manufacture parts using computerized numerical control machines.
Prerequisites: ENR-117
Additional Fees: Course fee applies.

ENR-220. Hydraulics and Fluid Power. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is an exploration into the relationship between pressure, density and temperature as they relate to hydraulic and pneumatic systems. Topics include hydraulic pumps, motors and air compressors. The course emphasizes use of engineering standards and specifications for circuit design and component selection. Electrical controls and application to systems are covered. Lab sessions further expand upon lectures by providing students with physical evidence to support theories and ideas acquired in class.
Prerequisites: MAT-110
Additional Fees: Course fee applies.

ENR-222. Mechanics of Solids. 3 Credits.
LECT 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending and combined stresses and column buckling. Also covered are axial force, shear moment and torque in structural members and in statically indeterminate systems. Elementary failure theory of structures and mechanical components is discussed.
Prerequisites: ENR-223.

ENR-223. Engineering Mechanics I (Statics). 3 Credits.
LECT 3 hrs.
This course is a vector approach to statics in a plane and in three dimensions, equilibrium of particles and rigid bodies. Equivalent force systems, structural analysis, centroids and moments of inertia. Virtual work and applied engineering problems are incorporated.
Prerequisites: MAT-131 and PHY-130.

ENR-224. Engineering Mechanics II (Dynamics). 3 Credits.
LECT 3 hrs.
This course is a calculus-based course in dynamics. Kinematics and kinetics of particles and rigid bodies. Newton's laws, work, energy, impulse and momentum are covered. Practical engineering problems are incorporated.
Prerequisites: ENR-223.

ENR-230. Engineering Strength of Materials. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of strength of materials are derived for uniaxial stresses and strains, direct shear, torsion bending, and combined stresses and column buckling. Elementary failure theory of structures and mechanical components is discussed. Laboratory covers a variety of tensile stress-strain, impact and hardness tests, as well as shear stress-strain and the techniques of report writing.
Prerequisites: ENR-223
Additional Fees: Course fee applies.

ENR-232. Materials Science. 3 Credits.
LECT 3 hrs.
This course covers the properties and structure of materials: atomic bonding, molecular, crystalline, noncrystalline structures and crystalline imperfections. It also covers metallic phases, equilibrium and nonequilibrium reactions, processing and properties of ferrous and non-ferrous metals, polymers, ceramics and composites. In addition, corrosion phenomenon is discussed.
Prerequisites: CHM-125 and CHM-126 and PHY-130.

ENR-234. Independent Study in Technology. 3 Credits.
LECT 3 hrs.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress.
Prerequisites: Permission of department chair.

ENR-235. Engineering Circuit Analysis I. 3 Credits.
LECT 3 hrs.
This first course in engineering circuit analysis covers DC circuit analysis including source transformations, mesh, nodal, superposition, Thevenin and Norton theorems, and the maximum power transfer theorem. Dependent as well as independent sources are included. Transient response of RC, RL and RLC circuits is introduced. Steady-state analysis of single and three phase AC systems is studied using phasor diagrams and the network theorems mentioned above. Real, reactive, apparent power and power factors are included. Use of the computer as a problem-solving tool is included in the course.
Prerequisites: MAT-132.

ENR-236. Engineering Circuit Analysis Laboratory I. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments in DC, AC and transients to accompany the course work in Engineering Circuit Analysis I.
Corequisites: ENR-235
Additional Fees: Course fee applies.

ENR-237. Engineering Circuit Analysis II. 3 Credits.
LECT 3 hrs.
This is a second course in engineering circuit analysis. Natural and step response of RL, RC and RLC circuits, mutual inductance, ideal transformers, series and parallel resonance are studied. Laplace transform theory is covered and includes step and impulse response in the S-domain. Bode diagrams of simple and quadratic factors are plotted and the computer is used for actual frequency and phase plots. Fourier Series are studied using both trigonometric and exponential forms.
Prerequisites: ENR-235
Corequisites: MAT-232.

ENR-238. Engineering Circuit Analysis Laboratory II. 1 Credit.
LAB 3 hrs.
This laboratory course includes experiments on transformers, series and parallel resonance, filters and frequency/phase response plots, and two-port hybrid models to accompany the course work in Engineering Circuit Analysis II.
Prerequisites: ENR-236
Corequisites: ENR-237
Additional Fees: Course fee applies.
ENR-240. Engineering Technology Project. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course covers the design of products and processes considering functional requirements, manufacturing feasibility and economy, and the use of technical literature and catalogs. Includes design layout and working drawings and group and individual projects.
Prerequisites: ENR-117 and MEC-110 and MEC-141
Additional Fees: Course fee applies.

ENR-241. Instrumentation and Control. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to the study of measuring systems and components, digital and analog signals and their characteristics. Mechanical and electromechanical transducer elements are used to measure pressure, temperature, displacement, velocity and acceleration. Static and dynamic performance of instruments, statistical analysis of experimental data are explored. A brief study of process controllers, programmable logic controllers and final control elements are also explored.
Prerequisites: ELT-201
Additional Fees: Course fee applies.

ENR-290. Special Topics in Technology. 1 Credit.
LECT 1 hr.
This course is for students in Engineering Technologies. The student selects an area of interest and proposes a plan of study to a sponsoring faculty member who supervises and evaluates the student's progress when used for independent study. The course is also used to cover either current or future topics of interest in technology. Topics discussed will have relevance to either electronics technology, mechanical technology or both, and may vary each semester.
Prerequisites: Permission of department chair.

ENR-291. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

ENR-292. Special Topics in Engineering. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in engineering. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: Permission of department chair.

English (ENG)

Courses

ENG-007. Writing Skills Review. 1 Credit.
LECT 2 hrs.
An intense mini-course focused on the remediation of an individual's writing deficiencies as evidenced on the college's placement test. Students could be placed in this course as a pre-requisite to ENG-111.
Prerequisites: Enrollment from college's placement test.

ENG-022. Elements of Writing. 1.5 Credit.
LECT 1.5 hr.
An abbreviated version of ENG-025 Writing Skills, this class is for students who exhibit a level of skills on the English Placement Test that preempts their placement in a full semester non-credit course.
Prerequisites: Enrollment from college's placement test.

ENG-025. Writing Skills. 3 Credits.
LECT 3 hrs.
Designed to increase the student's proficiency in writing skills, paragraph development, the topic sentence, transitional techniques, comprehension, and supplemental structure and grammar. Lead to the short essay in preparation for English Composition I.
Prerequisites: Enrollment from college's placement test.

ENG-111. English Composition I. 3 Credits.
LECT 3 hrs.
The first half of the 6-credit English Communications requirement emphasizes the fundamentals of written communications including expository prose, reading comprehension and interpretation, and rhetorical modes.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

ENG-112. English Composition II. 3 Credits.
LECT 3 hrs.
The second half of the English Communications requirement continues emphasis on expository prose and critical writing through the use of literary genres. Methods of literary research and a research paper are required.
Prerequisites: ENG-111 or ENG-131.

ENG-113. Creative Writing. 3 Credits.
LECT 3 hrs.
A workshop course designed to encourage and develop talent in the writing of poetry, short fiction and/or drama. Class discussions center on manuscripts submitted by the students.

ENG-114. Advanced Creative Writing. 3 Credits.
LECT 3 hrs.
A writer's workshop designed for students who have successfully completed Creative Writing and who wish to improve their work through discussion of class submissions and the works of established writers.
Prerequisites: ENG-113.

ENG-115. The Short Story. 3 Credits.
LECT 3 hrs.
A study of the short story as a specialized art form, involving the study of writing techniques and styles, films and critical analysis of selected stories.
Prerequisites: ENG-111 or ENG-131.

ENG-116. The Novel. 3 Credits.
LECT 3 hrs.
A survey of novels both classic and contemporary, with particular attention to the methods by which such novels are created. Included may be novelists as varied as Dickens, Camus, Flaubert, Vonnegut, Dostoyevsky, Bellow, Joyce and Hesse.
Prerequisites: ENG-111 or ENG-131.
ENG-118. Children’s Literature. 3 Credits.
LECT 3 hrs.
A survey of children's literature including poetry, picture books, fairy tales and folklore, myths and epics, realistic fiction, and fantasy, with a special emphasis on multicultural and ethnic works.
Prerequisites: ENG-111 or ENG-131.

ENG-119. Introduction to Poetry. 3 Credits.
LECT 3 hrs.
Designed for the beginner to develop skill and confidence in reading, understanding, evaluating and appreciating poetry. Includes a wide variety of material but emphasizes short lyrics by major British and American authors. Students are not required to write original poetry.
Prerequisites: ENG-111 or ENG-131.

ENG-121. Introduction to Linguistics. 3 Credits.
LECT 3 hrs.
An overview of the dynamics of language, specifically American English. The course examines the fundamental concepts of language development and variation. Major topics include how we communicate, dialectical variations, language development and change, and language and gender.
Prerequisites: ENG-111 or ENG-131.

ENG-123. Introduction to Linguistics - Honors. 3 Credits.
LECT 3 hrs.
The course examines the fundamental concepts of language structure and dynamics, including language development, variation and change. Students are required to apply and expand basic theory through independent research and projects that are presented to the class.
Prerequisites: ENG-111 or ENG-131 and permission of department chair or honors advisor.

ENG-131. English Composition I Honors. 3 Credits.
LECT 3 hrs.
An advanced course in rhetoric and expository writing for students selected on the basis of academic record, testing or writing samples. Enriches the reading materials and assignments of English Composition I with supplementary materials designed to challenge the advanced student.
Prerequisites: Permission of department chair or honors advisor.

ENG-132. English Composition II Honors. 3 Credits.
LECT 3 hrs.
A continuation of English Composition I-Honors designed to challenge the advanced student. The course emphasizes expository prose and introduces students to short story, poetry and drama and is a continuation of expository writing techniques introduced in English Composition I-Honors. This course is designed to give the advanced student experience in analyzing perceptively and writing critically about three literary genres: short story, poetry and drama.
Prerequisites: ENG-111 or ENG-131 and permission of department chair or honors advisor.

ENG-206. African and African-American Literature. 3 Credits.
LECT 3 hrs.
This course is intended to acquaint the student with the general themes of African and African-American writers through a broad sampling of fiction and poetry.
Prerequisites: ENG-112 or ENG-132.

ENG-210. Fantasy Novels. 3 Credits.
LECT 3 hrs.
This course will explore fantasy literature as a reaction to the rationalism and realism that dominate post-industrial literature and will explore fantasy's ability to capture imaginations, offer alternative visions, and serve as an analysis of human nature and contemporary society. Authors may include J.R.R. Tolkien, Ursula Le Guin, George R.R. Martin, J.K. Rowling, Neil Gaiman, and Patrick Rothfuss.
Prerequisites: Take ENG-111, ENG-112 or ENG-131 ENG-132.

ENG-214. Women in Film. 3 Credits.
LECT 3 hrs.
Films from c. 1913 to the present are examined for the diverse images of women which they convey. Issues of class, race, ethnicity, global perspective and sexual preference are considered. Films by women directors and writers are emphasized, but coverage also includes works by significant male filmmakers. Genres range from classical Hollywood narrative fiction to documentary, animation and avant-garde.
Prerequisites: ENG-111 and ENG-112 or ENG-131 and ENG-132 or permission of department chair.

ENG-220. Contemporary Literature. 3 Credits.
LECT 3 hrs.
Covers literary works of the last 10 years written by Western and non-Western authors, poets and playwrights in a multi-genre, multi-cultural format, with an emphasis on literature as the reflection of a respective contemporary culture. Writers to be discussed may include Rushdie, Baldwin, Pinter, et al.
Prerequisites: ENG-111 and ENG-112 or ENG-131 and ENG-132.

ENG-224. Women in Literature. 3 Credits.
LECT 3 hrs.
Classic and contemporary literary works are examined for the images of women which they convey. Discussion focuses on relationships between such images and the realities of women's lives, past and present, in the United States and abroad. Issues of class, race, ethnicity, global perspective and sexual preference are considered in relationship to gender. Both male and female authors may be studied. Some film adaptations may be examined for comparisons with written works.
Prerequisites: ENG-111, ENG-112 or ENG-131 ENG-132 or permission of department chair.

ENG-228. Literature of the Theatre. 3 Credits.
LECT 3 hrs.
Designed to give students a broad range of experience in “seeing” dramatic literature, not only through the reading and interpretation of plays, but also through the analysis of directors who have transferred plays from the abstract page to actual theatre production.
Prerequisites: ENG-112 or ENG-132.

ENG-233. History of the Theatre I. 3 Credits.
LECT 3 hrs.
This course presents a historical survey of the major developments in the theatre from ancient Egypt, Greece and Rome through the time of Shakespeare. Students will become aware of the major developments in all areas of the theatre: acting, directing, design and theatre architecture.
ENG-234. History of the Theatre II. 3 Credits.
LECT 3 hrs.
This course presents a historical survey of the major developments in the theatre from the time of Shakespeare to the present day. Each historical period includes study of the major dramatists and their works.
Prerequisites: ENG-111 or ENG-132 and ENG-233.

ENG-243. World Literary Traditions: Beginnings to 1650. 3 Credits.
LECT 3 hrs.
A comprehensive survey of Western and non-Western literature from the ancient world to 1650. Among genres emphasized are epic, lyric and drama. Representative works from Europe, China, India, Japan and Africa are included.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132.

ENG-244. World Literary Traditions: 1650 to Present. 3 Credits.
LECT 3 hrs.
A comprehensive survey of Western and non-Western literature from 1650 to the present. Representative works from Europe, China, India, Japan and Africa are included. Major authors may include Moliere, Flaubert, Dostoevsky, Tolstoy, Tagore and Achebe.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132.

ENG-246. English Classics From Beowulf to Paradise Lost: a Survey of Drama, Romances and Epics. 3 Credits.
LECT 3 hrs.
A chronological overview of England's early literary works by selected writers such as Chaucer, Spencer, Shakespeare, Marlowe and Milton.
Prerequisites: ENG-111 and ENG-112 or ENG-131 and ENG-132.

ENG-247. Romantics, Victorians and Moderns Major British Writers of the 19th and 20th Centuries. 3 Credits.
LECT 3 hrs.
A survey of the Romantic, Victorian and Modern periods of British literature, and a study of the growth of the novel. Major writers may include Blake, Wordsworth, Coleridge, Keats, E. Bronte, Browning, Arnold, Tennyson, Hardy, Lawrence, Yeats, Eliot and Joyce.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132.

ENG-249. American Literature From the Colonial to The Civil War. 3 Credits.
LECT 3 hrs.
A survey of American literature from colonial beginnings to the Civil War, including but not restricted to Franklin, Cooper, Poe, Hawthorne, Melville, Emerson, Thoreau and Whitman. The influence of women, Native Americans, African Americans and others who contributed to the development of American culture may be examined as well as concepts such as Calvinism, Neo-classicism and Romanticism.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132.

ENG-283. World Literary Traditions: Beginnings - 1650 - Honors. 3 Credits.
LECT 3 hrs.
This course is the first part of a survey of world literature that focuses on classics from various cultures including Greek, Roman, Hebrew, Babylonian, Chinese, Persian, Japanese and European. Readings are intended to stimulate class discussions and thoughtful written assignments.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132 and permission of department chair or honors advisor.

ENG-284. World Literary Traditions: 1650 to Present: Honors. 3 Credits.
LECT 3 hrs.
This course is the second part of a survey of world literature that considers the major literary periods as reflected in classics of Western culture as well as African, Asian and Middle Eastern traditions. Attention is also given to racial issues. Readings are intended to stimulate both oral and written responses.
Prerequisites: ENG-111, ENG-112 or ENG-131, ENG-132 and permission of department chair or honors advisor.

ENG-291. Special Topics in English. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in English. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in English.

ENG-292. Special Topics in English. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in English. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in English.

Fire Science Technology (FST) Courses

FST-101. Introduction to Fire Science. 3 Credits.
LECT 3 hrs.
This class is considered to be the foundation course for all students of Fire Science Technology. Students are introduced to the concept of the systems approach to fire protection by presenting the components of modern fire department responsibility including emergency incident management, public education, training, resource management and customer service. Students who have completed their Fire Fighter 1 will receive credit for this course.

FST-102. Fire Prevention and Related Codes. 3 Credits.
LECT 3 hrs.
This course provides students with basic knowledge of federal, state and local codes related to building construction, fire and life safety requirements, and other codes. Includes New Jersey state fire safety regulations and related state requirements. National Fire Protection Association (NFPA) and other standards related to fire protection and life safety are examined. Students who have completed their Fire Fighter 1 will receive credit for this course.
FST-103. Fire Fighting Tactics and Strategy. 3 Credits.
LECT 3 hrs.
Analysis of the basic rules of fire fighting strategy, defining engine company responsibilities, defining ladder company functions, correlating mutual aid fires and general fire problems. Studies the effective management of suppression forces at various fire situations. Includes consideration of pre-fire planning, problem identification and solution implementation.

FST-106. Fire Protection Systems. 3 Credits.
LECT 3 hrs.
A study of the nature of public and private fire protection with an emphasis on analysis of systems of fire detection, fire alarm, fire communications, water distribution networks, fire service, hydraulics and fire suppression.
Prerequisites: Permission of department chair.

FST-107. Fire Apparatus Specifications, Inspections and Maintenance. 3 Credits.
LECT 3 hrs.
This course covers the principles of care, maintenance and operation of fire apparatus and pumps. Includes pump construction and accessories, pumping techniques, power development and transmission. Also includes driving, troubleshooting and producing effective fire streams.

FST-201. Fire Service Management. 3 Credits.
LECT 3 hrs.
This course introduces the student to the principles of personnel management through the use of effective leadership techniques. Topics include overview of the fire service as an organization and the officer's role in it, interpersonal communications, personality typing, skill development, leadership techniques, group dynamics and principles of fire company management.
Prerequisites: FST-101 or equivalent.

FST-202. Hazardous Materials. 3 Credits.
LECT 3 hrs.
A comprehensive study of the physical, chemical and toxicological characteristics of hazardous materials. This course includes basic methods of recognition and identification based upon the chemical and physical properties of hazardous materials, basic safety procedures when utilizing specific types of protective clothing and equipment, and basic tactical information relating to scene management.
Prerequisites: MAT-007 or passing score on the algebra section of the placement test.

FST-204. Fire Protection, Building Construction. 3 Credits.
LECT 3 hrs.
This course introduces basic construction principles and the special characteristics of wood and ordinary construction as they concern the fire service. Primary emphasis is on improving the fire officer's ability to ensure firefighter safety by recognizing common causes and indicators of failure and other hazards relating to building construction. Course material enables the fire officer to better predict the overall reaction of a building to fire conditions.

FST-205. Fire Investigation. 3 Credits.
LECT 3 hrs.
An in-depth course that defines successful methods for conducting fire investigations. Specific topics include basic chemistry of fire, point of origin, fire cause (both accidental and incendiary), motivation of the fire setter, fire scene investigations, evidence collection, photography, follow-up investigation and court testimony.

FST-206. Fire Hydraulics. 3 Credits.
LECT 3 hrs.
This course is a concentrated study in the application of mathematics and physics to the properties of water as used in fire suppression operations. Classic hydraulics formulas are used to solve problems for flow velocity, nozzle reaction, friction loss, water distribution systems, fire flow testing, fire service pumps and fire ground hose evolutions.
Prerequisites: MAT-007 or passing score on the algebra section of the placement test.

FST-207. Emergency Medical Technician. 6 Credits.
LECT 4 hrs., LAB 4 hrs.
This course is designed to prepare the basic Emergency Medical Technician in accordance with the United States Department of Transportation curriculum and the New Jersey Department of Health guidelines. This course covers an introductory survey of emergency medical services including medical, legal/ethical aspects, role of the Emergency Medical Technician, patient assessment, care of wounds and fractures, airway maintenance, medical and environmental emergencies, patient transportation, emergency childbirth and basic extrication. After completion of this course, the student will be eligible to take the National Registry Examination for certification as an Emergency Medical Technician-Basic. Students who are already registered EMT-Basic in New Jersey will be given credit for this course.

FST-210. Current Issues in Fire Science/ Capstone Experience. 3 Credits.
LECT 3 hrs.
A review of the current problems affecting the fire service with particular emphasis on resource allocation, planning and fiscal constraints. The capstone experience requires the student to author and present a scholarly research paper on a topic covered in this course. Students must have completed 40 credit hours in the Fire Science Curriculum or have permission of department chair.
Prerequisites: Permission of department chair.

French (FRE)

Courses

FRE-111. Elementary French I. 3 Credits.
LECT 3 hrs.
Not for students with two or more years of high school French. See department chair. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar.

FRE-112. Elementary French II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of French expand their study of basic French pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes possessive and demonstrative adjectives, partitive articles, the verb aller and le futur proche, -re verbs, common irregular verbs in the present tense, the imperative and the past tense. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance French language proficiency. The cultural context of the language is also covered.
Prerequisites: FRE-111 or permission of department chair.
FRE-211. Intermediate French I. 3 Credits.
LECT 3 hrs.
This course is intended for students whose study of the first year of French is recent and who wish to acquire new skills in the language. It includes the introduction of new grammatical concepts such as affirmative and negative pronouns, the imperfect tense, direct and indirect object pronouns, agreement with past participles, adverbs, the pronouns y and en, and additional verbs with irregular forms. Higher emphasis is given to conversation. Some compositions are required.
Prerequisites: FRE-112 or permission of department chair.

FRE-212. Intermediate French II. 3 Credits.
LECT 3 hrs.
This course expands the French vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate to advanced knowledge of French. The grammatical concepts presented in the course include, but are not limited to, the future and conditional tenses, the subjunctive mood, indefinite pronouns and adjectives, relative pronouns, and the comparative and superlative of adjectives. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance French language proficiency. The cultural context of the language is also covered. A few readings from modern French literature and compositions on cultural subjects are required.
Prerequisites: FRE-211 or permission of department chair.

FRE-221. French Conversation and Literature I. 3 Credits.
LECT 3 hrs.
Intensive practice in speaking French. Oral and written reports and discussions based on readings from literature in French.
Prerequisites: FRE-212 or permission of department chair.

FRE-222. French Conversation and Literature II. 3 Credits.
LECT 3 hrs.
This course focuses on highly advanced vocabulary and sentence structure for both everyday and academic French. Oral and written reports and discussions based on advanced readings from literature in French.
Prerequisites: FRE-221 or permission of department chair.

FRE-291. Special Topics in French. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in French. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in French or permission of department chair.

FRE-292. Special Topics in French. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in French. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in French or permission of department chair.

German (GER)

Courses
GER-111. Elementary German I. 3 Credits.
LECT 3 hrs.
Not intended for students with two or more years of high school German. See department chair. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar.
Prerequisites: GER-111 or permission of department chair.

GER-112. Elementary German II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of German expand their study of basic German pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes imperative, past, present and dependent infinitives, attributive adjectives and adjectives used as nouns. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance German language proficiency. The cultural context of the language is also covered.
Prerequisites: GER-111 or permission of department chair.

GER-211. Intermediate German I. 3 Credits.
LECT 3 hrs.
This course is intended for students whose study of the first year of this language is recent and who wish to acquire new skills in the language. It includes a continuation of grammar. Higher emphasis is given to conversation. Some compositions are required.
Prerequisites: GER-112 or permission of department chair.

GER-212. Intermediate German II. 3 Credits.
LECT 3 hrs.
This course expands the German vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the German language. Grammar study includes past perfect and pluperfect tenses, declension of adjectives, subjunctive mood and conjunctions. Course work involves conversation and readings from modern German literature and the writing of compositions. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance German language proficiency. The cultural context of the language is also covered.
Prerequisites: GER-211 or permission of department chair.

GER-221. German Conversation and Literature I. 3 Credits.
LECT 3 hrs.
Intensive practice in speaking everyday German. Oral and written reports and discussions based on readings from German literature are incorporated.
Prerequisites: GER-212 or permission of department chair.

GER-222. German Conversation and Literature II. 3 Credits.
LECT 3 hrs.
This course focuses on highly advanced vocabulary and sentence structure for both contemporary and academic German. Oral and written reports and discussions based on advanced readings from German literature are incorporated.
Prerequisites: GER-221 or permission of department chair.
GER-291. Special Topics in German. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in German. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in German or permission of department chair.

GER-292. Special Topics in German. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in German. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in German or permission of department chair.

Graphic Design (GRD)

Courses

GRD-110. History of Graphic Design. 3 Credits.
LECT 3 hrs.
This is a lecture course that provides an overview of major graphic design movements and design styles. The focus is on important design innovations and breakthrough technologies. The student is introduced to graphic design masters and masterpieces and is familiarized with major design studios and advertising agencies. A classic foundational textbook is required reading which is supported by slide presentations, videos, websites and trade articles.
Prerequisites: Placement basis or ENG-025 or equivalent.

GRD-111. Introduction to Computer Graphics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Instruction focuses on the use of the computer as a visual tool and the emphasis is on creative visual input. An overview of various graphic design programs such as illustration, scanning and page layout supports the creation of two-dimensional design as it applies to printed material.
Prerequisites: ART-122, ART-130, ENG-025, MAT-011 or MED-114 and ART-130
Additional Fees: Course fee applies.

GRD-116. Electronic Prepress. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides the student with the basic vocabulary and fundamental understanding of the techniques and processes involved in both traditional mechanical layout and the contemporary counterpart of electronic prepress preparation for printed material. Students manipulate the elements of typography, photography, illustration and text to create camera-ready art and electronically ready art and finished traditional and electronic mechanicals. Field trips to a printing facility and/or service bureau may be included.
Prerequisites: ART-122, ART-130, GRD-111, GRD-118
Additional Fees: Course fee applies.

GRD-118. Typography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Emphasis is based on developing a typographic vocabulary, identifying and recognizing type fonts and exploring type as design elements. Students engage in the skills of hand lettering and compositional layout while addressing letter proportion, anatomy, structure and typographic space. Communication problems emphasize typography as the primary design focus.
Prerequisites: ART-122, ART-130-025, MAT-011 or MED-114 and ART-130
Additional Fees: Course fee applies.

GRD-120. Graphic Design I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course introduces professional creative problem solving in graphic design. Emphasis is based on the fundamentals of critical thinking, the critique process and effectively integrating concepts with the principles of design. Students engage in visual research, thumbnail sketching and refining rough process sketches by hand. The use of art and design to meet the communication needs of business and industry are explored.
Prerequisites: ART-122, ART-130-025, MAT-011
Additional Fees: Course fee applies.

GRD-215. Commercial Illustration. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course combines studio approaches and illustration techniques with an emphasis on communication, visual interpretation and the integration of illustration with typography. Students execute product renderings, editorial illustrations and illustrations for newspapers, magazines and books. Proper use of reference material is emphasized and the development of the working sketch is explored as the foundation of the finished illustration. Emphasis is on conceptual thought, non-verbal communication and drawing techniques for reproduction.
Prerequisites: ART-122, ART-130
Additional Fees: Course fee applies.

GRD-218. Typography II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A continuation of Typography I with a concentration on creating type design solutions using the computer. Emphasis is on applying the rules of typography, using graphic software effectively, exploring visual hierarchy and engaging in interpretive typography to develop the typographic message.
Prerequisites: GRD-111, GRD-118, GRD-120
Additional Fees: Course fee applies.

GRD-220. Graphic Design II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A continuation of Graphic Design I with an exploration of more advanced design problem solving and the development of design aesthetics. Emphasis is placed on developing comprehensive layouts that meet the needs of industry standards. Projects may include branding, corporate ID, posters, packaging and select visual communication designs. Field trips to art departments, studios and agencies may be included.
Prerequisites: GRD-111, GRD-118, GRD-120
Additional Fees: Course fee applies.
GRD-227. Portfolio Project. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an examination and application of a variety of methods for assembling and presenting graphic art and design in a professional manner. This course focuses on portfolio preparation, presentation and interview procedures. Formal and informal critiques assist the student in defining strengths and career goals.
Prerequisites: Scheduled during the final semester and permission of designated Graphic Design faculty.

GRD-229. Cooperative Work Experience-Related Clas. 1 Credit.
LECT 1 hr.
A related class designed to supplement work experience. Weekly meetings include readings, discussions, written assignments and critical analysis of the work experience.
Prerequisites: GRD-111, GRD-116, GRD-118, GRD-120, GRD-220 and permission of designated Graphic Design faculty
Corequisites: GRD-232.

GRD-230. Computer Assisted Illustration. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A continuation of the study of commercial illustration techniques with the integration of typography. Students explore computer color illustration and image manipulation, and work with scanned photography, digitized illustrations, laser and inkjet prints. Students execute product and editorial illustrations with an emphasis on combining fine art and graphic art processes to create sophisticated portfolio projects.
Prerequisites: GRD-111, GRD-118, GRD-120
Additional Fees: Course fee applies.

GRD-232. Graphic Design Internship/Cooperative Work Experience. 3 Credits.
LECT 3 hrs.
Practical work experience within the realm of graphic design and advertising. Students perform work for cooperating employers in advertising agencies, graphic design studios or corporate art departments. Practical work experience may include design assignments at printing facilities or other communication-based businesses.
Prerequisites: GRD-111, GRD-116, GRD-118, GRD-120, GRD-220
A minimum 2.5 GPA and portfolio review with permission by designated Graphic Design faculty is required
Corequisites: GRD-229.

GRD-240. Computer Assisted Page and Cover Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This is an intermediate lecture/studio course designed to further develop skills in publication design with the goal of designing the Promethean literary and arts magazine. In the professional environment of a publication design studio format, students work as a creative team of editors, designers and proofreaders to develop the Promethean from concept to final production, under the supervision of a specialist's supervision. Lecture topics include organizational planning, purpose, content, typeface selection, illustration/photography, paper stock, bindings, covers and management skills. Utilizing current industry software, students have the opportunity to design and produce a finished professional in-house publication for the college and their portfolio. Graphic design issues, historical, cultural and technical, are addressed.
Prerequisites: Permission of designated Graphic Design faculty
Additional Fees: Course fee applies.

GRD-250. Brochure and Magazine Design. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course trains the person familiar with traditional layout procedures. It stresses transferring manual board skills to the electronic screen. Brochures, magazines, web pages, newspaper pages and a variety of other print materials are practiced. This course examines theory, styles, trends and the mechanics of cover and page design to create portfolio projects.
Prerequisites: GRD-111, GRD-118, GRD-120
Additional Fees: Course fee applies.

GRD-255. Advertising Design. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course is designed to further develop hands-on skills in concept and design with the goal of creating an advertising campaign. In the professional environment of an ad agency format, students work as a creative team of art director and writer to research and develop the ad, radio and TV commercial from concept to final production, under a specialist's supervision. Lecture topics include organizational planning, purpose, content, casting production techniques, illustration/photography supervision, as well as management skills, all stressed while the creative execution of the advertising takes place. Assignments consist of print ads, TV commercials, sales promotion, packaging, posters, billboards and web design. Utilizing current standard industry principles, students have the opportunity to design and produce a finished professional product for their portfolio. Advertising issues, historical, cultural and technical, are addressed. A tour of a Manhattan ad agency might be included.
Prerequisites: GRD-111, GRD-118, GRD-120 and permission of designated Graphic Design faculty
Additional Fees: Course fee applies.

GRD-260. Branding for Graphic Designers. 3 Credits.
LECT 1 hr., LAB 4 hrs.
This course will be approached from a graphic design page layout perspective using current software. Students apply critical thinking and the principles learned in graphic design to arrive at a well-designed brand identity and presence that works within the overall semiotic branding experience. Branding issues, design aesthetics, cultural and technical applications are addressed to meet the needs of Today's markets.
Prerequisites: ART-122, ART-130, GRD-111, GRD-118, GRD-120.

GRD-262. Branding for the Web and Other Media. 3 Credits.
LECT 1 hr., LAB 4 hrs.
The course will be approached from a graphic design page layout perspective. Students will apply the principles learned in graphic design to arrive at a well-designed brand identity and presence that works within the overall semiotic branding experience for the Web and other media. Students will need the full use of a current Macintosh computer.
Prerequisites: ART-122, ART-130, GRD-111, GRD-118 and GRD-120.

GRD-291. Special Topics in Graphic Design. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An examination of selected topics or issues in Graphic Design. Topics may differ each time the course is offered. Students should consult designated Graphic Design faculty for further information.
Prerequisites: A selected course in Graphic Design
Additional Fees: Course fee applies.
GRD-292. Special Topics in Graphic Design. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Graphic Design. Topics may differ each time the course is offered. Students should consult designated Graphic Design faculty for further information.
Prerequisites: A selected course in Graphic Design
Additional Fees: Course fee applies.

Health Education (HED)

Courses

HED-112. Drugs, Society and Human Behavior. 3 Credits.
LECT 3 hrs.
This course examines the effects drugs have on the individual and society, taking a critical look at the most recent scientific data drawn from medical, sociological and student research. Topics include, but are not limited to, neurophysiology, pharmacology and the demographics of drug use, legal issues, and treatment and prevention programs. Different types of drugs are examined.
Additional Fees: Course fee applies.

HED-115. Personal and Family Nutrition. 3 Credits.
LECT 3 hrs.
In this course, students study the relationships of nutrition and eating patterns to one's health, nutritive value and composition of foods, metabolism, functions and requirements of nutrients throughout life, and essentials of an adequate diet. Emphasis is placed on the practical application of nutrition concepts in everyday life.
Additional Fees: Course fee applies.

HED-128. Lifetime Wellness. 2 Credits.
LECT 1 hr., LAB 2 hrs.
This course is designed to provide students with the knowledge and skills necessary to make intelligent decisions about health and wellness. Topics include nutrition and weight management, substance abuse, stress management, fitness, cardiovascular disease and sexually transmitted diseases. Students engage in personally selected programs to improve wellness.
Additional Fees: Course fee applies.

HED-130. Mind-Body Health. 3 Credits.
LECT 3 hrs.
This course explores the relationship between the mind and the body. Emphasis is placed on relaxation, meditation, and yoga to enable students to reach a state of peace, calmness and self-awareness. Students explore the integration of the entire self in order to achieve an understanding and an awareness of their own selves and take control of their wellness.
Additional Fees: Course fee applies.

HED-132. Stress Management. 1 Credit.
LECT 1 hr.
This course provides students with an understanding of the basic principles of the stress response, the General Adaptation Syndrome, stressors and stress management. Students participate in physical and cognitive exercises designed to reduce stress.
Additional Fees: Course fee applies.

HED-133. Weight Management. 1 Credit.
LECT 1 hr.
This course covers information about lifetime weight management. The role of diet, exercise, behavior modification and stress management and their relationship to weight management are emphasized. Students analyze diets, set goals and apply a weight management program to themselves throughout the course.

HED-283. Cardiopulmonary Resuscitation. 1 Credit.
LAB 2 hrs.
This course is taught according to American Heart Association (AHA) guidelines. Students learn about heart disease prevention, early recognition of heart attack and stroke, early access to Emergency Medical Services, and recognition and treatment for respiratory arrest, cardiac arrest and obstructed airway emergencies. Students who successfully complete the requirements will receive an AHA CPR card (BLS for Healthcare Provider CPR). This course is available through the Division of Corporate and Community Programs. Students enrolled in the majors of Nursing, Radiography, Respiratory Therapy, Exercise Science, and Early Childhood Education may request that they receive 1 credit toward their HED/HES requirement. Students must present a valid American Heart Association CPR card (BLS for Healthcare Provider CPR) to the Office of Records and Registration to receive credit. Course fees do not represent income to the AHA or any of its components.
Additional Fees: Course fee applies.

HED-286. Personal Health and Wellness. 3 Credits.
LECT 3 hrs.
This course examines current health and wellness topics that have an impact on the individual in today's society. Emphasis is on a wellness approach, examining the physical, emotional, intellectual, social and spiritual dimensions of health. Students engage in evaluations of their own wellness behaviors and investigate in detail at least one health issue of personal significance. (There is no substitution for this course in programs that require it for degree completion.)
Additional Fees: Course fee applies.

HED-293. Special Topics in Health Education. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Health Education. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A three-credit introductory course in Health Education.

HED-294. Special Topics in Health Education. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Health Education. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A three-credit introductory course in Health Education.

HED-295. First Aid and Emergency Care. 3 Credits.
LECT 3 hrs.
A basic course in first aid which acquaints students with information about prevention of accident and injury and about emergency assessment, recognition and treatment of trauma and sudden illnesses. Upon successful completion of the requirements, the student will receive First Aid certification.
Additional Fees: Course fee applies.
Health and Wellness (HES)

Courses

HES-104. Foundations of Personal Training. 3 Credits.
LECT 3 hrs.
This comprehensive class is ideal for anyone preparing for the ACSM, NASM or ACE Personal Trainer exam and those who want to pursue a career in personal training. Course content includes anatomy, applied exercise science, kinesiology, professional roles and responsibilities. ACSM course curriculum is followed. Open to Personal Trainer Certificate of Achievement (Curriculum 0950) students only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

HES-106. Personal Trainer Field Experience. 1 Credit.
LAB 1 hr.
This course provides Personal Trainer Certificate of Achievement students with the opportunity to work with clients in the field. Students are linked with professionals in health clubs and commercial and corporate fitness centers who mentor their progress. Arrangements for this field experience must be coordinated through the field experience instructor. Students must accomplish a minimum of 40 hours in one semester in their field experience and write a report of the experience.
Prerequisites: HES-104, open to Personal Trainer Certificate of Achievement students only

HES-107. Program Design and Implementation. 3 Credits.
LECT 3 hrs.
This course provides students with the practical application of current testing procedures and instrumentation used in exercise testing. Students learn to perform and interpret the basic measurement protocols for cardiorespiratory endurance, muscular strength and endurance, flexibility, body composition, and blood pressure. Students learn the principles related to exercise prescription, develop the necessary skills to design and implement training programs as they relate to the components of fitness. Safeguards and effectiveness for all fitness levels are addressed.
Prerequisites: HES-104, open to Personal Trainer Certificate of Achievement students only
Additional Fees: Course fee applies.

HES-111. Introduction to Exercise Science. 3 Credits.
LECT 3 hrs.
This course is recommended in the first semester. This is an introductory course to acquaint students with the development and structure of the field of exercise science. The current scientific development of the field is stressed, with emphasis on basic exercise physiology, health and fitness. There is a 20-hour internship requirement for this course. Open to Exercise Science majors only.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

HES-121. Aerobic Exercise. 1 Credit.
LAB 2 hrs.
This course provides the student with the underlying principles of cardiovascular fitness and an opportunity to participate in aerobic activities designed to improve cardiovascular fitness, firm muscles, reduce fat and cope with stress.
Additional Fees: Course fee applies.

HES-125. Stretching and Strengthening. 1 Credit.
LAB 2 hrs.
This course provides a thorough presentation of exercises for improving strength and flexibility without the need for special equipment. Emphasis is on exercising safely and learning the importance of strength and flexibility in conditioning, injury prevention and rehabilitation. It is designed to give students the tools with which to create a personal exercise program. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.

HES-126. Personal Fitness. 1 Credit.
LAB 2 hrs.
Students design and practice an exercise program that develops selected components of physical fitness. Each student undertakes assessments of various components of fitness.
Additional Fees: Course fee applies.

HES-127. Weight Training. 1 Credit.
LAB 2 hrs.
Basic principles of resistance (weight) training are taught, emphasizing training for general conditioning. Training programs for major muscle groups are developed and practiced. Equipment used includes free weights and some machines.
Additional Fees: Course fee applies.

HES-128. Yoga. 1 Credit.
LAB 2 hrs.
This is an introductory course in yoga covering basic hatha yoga postures and exercises. Breathing techniques, flexibility and muscular endurance are enhanced. The course helps relieve stress and develop a sense of peacefulness and tranquility while improving fitness. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.

HES-129. Self-Defense. 1 Credit.
LAB 2 hrs.
This course provides students with the knowledge and skills to judge potential threats and react swiftly to defend themselves. Social and psychological effects of violence are discussed, along with legal issues of self defense. The basic techniques of Tae Kwon-Do, Jui-Jitsu and Aikido are introduced for everyday usage. A martial arts attitude is developed.
Additional Fees: Course fee applies.

HES-130. Tai Chi. 1 Credit.
LAB 2 hrs.
Tai Chi is a low-impact form of oriental exercise that increases energy, balance and overall health. Total mind-body interaction is emphasized. This course is a gentle means to contribute to overall health and fitness.
Additional Fees: Course fee applies.

HES-131. Pilates. 1 Credit.
LAB 2 hrs.
Pilates is a form of exercise that conditions the muscles through specific strength exercises without creating bulk. Based on the system introduced by Joseph Pilates over 70 years ago, exercises are done on both the mat and machines. Emphasis is on the core strength and flexibility of the abdomen and back, as well as other major body areas. Pilates is an exercise system that also concentrates on mind-body connection and correct postural alignment to gain optimal health and fitness. Students need to supply their own exercise mats.
Additional Fees: Course fee applies.
HES-141. Personal Challenge I. 1 Credit.
LAB 2 hrs.
This activity course focuses on the importance of reaching beyond the individual and utilizing group resources to solve problems through trust, teamwork, communications, self-esteem building, group problem-solving skills, decision making and fun. Students execute safely a series of adventure activities involving wall climbing, rope hanging, game playing and cable walking in order to enable the group to cross real and imaginary boundaries. All activities are individualized so that any student may successfully participate. Taught off-campus.
Additional Fees: Course fee applies.

HES-161. Aquatic Fitness. 1 Credit.
LAB 2 hrs.
This is an exercise course in the pool designed for the student who wants an alternative to land exercise. The course provides the skills and knowledge to develop an overall aquatic workout to suit individual needs, especially for those who may require non-weight-bearing exercise.
Additional Fees: Course fee applies.

HES-162. Basic Swimming. 1 Credit.
LAB 2 hrs.
This course is designed for the non-swimmer or beginner swimmer who has had little or no instructional experience and who may feel uncomfortable in the water. Through this course, one gains basic swimming and diving skills progressing from shallow to deepwater swimming. The National American Red Cross Swimming Levels I-III is covered.
Additional Fees: Course fee applies.

HES-182. Golf I. 1 Credit.
LAB 2 hrs.
A beginner's study and practice of the fundamental skills and basic rules of the game of golf. Topics include the make-up of the course, the grip, swing and stance, the equipment, and the rules. A portion of the course is held off campus at local golf facilities.

HES-184. Tennis. 1 Credit.
LAB 2 hrs.
An introductory course which covers the basic strokes, strategy and rules of the game of tennis. Emphasis is placed on the instruction, practice and utilization of skills and rules in actual match situations. Students must supply their own tennis rackets and balls.
Additional Fees: Course fee applies.

HES-186. Badminton. 1 Credit.
LAB 2 hrs.
A beginning course which introduces the student to the basic strokes, rules and fundamental strategies of the game of badminton. Emphasis is placed on the utilization of newly acquired skills in game situations.
Additional Fees: Course fee applies.

HES-187. Volleyball. 1 Credit.
LAB 2 hrs.
This course develops techniques, skills and strategies of volleyball. Emphasis is on the development of the basic skills essential for success and enjoyment.

HES-211. Kinesiology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course emphasizes the analysis of the principles of movement through human anatomical design. Major joints of the body, their actions and the muscles that do those actions are stressed. Application to physical exercise is stressed in lab work on strength, endurance and potential motion of major joints.
Prerequisites: BIO-101
Additional Fees: Course fee applies.

HES-212. Exercise Physiology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course includes the study of human responses and adaptations to exercise of varying levels of stress and intensity. Major topics include bioenergetics, the physiology of the circulatory, respiratory, muscular and nervous systems as they apply to exercise, and the underlying physiological basis of fitness. Laboratory experiences illustrate practical application of theoretical content with hands-on experiences to measure and apply what is learned in the lecture component of the course.
Prerequisites: BIO-101, BIO-102 and HES-111, open to Exercise Science majors only
Additional Fees: Course fee applies.

HES-213. Exercise Measurement and Prescription. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course stresses the appropriate measurement of various aspects of human exercise. Measurement of body composition, cardiovascular efficiency, muscular strength and endurance and other physiological parameters are taught and practiced. Students learn how to develop individualized and properly designed exercise prescriptions for adults, including special populations.
Prerequisites: HES-212 (minimum grade of C) Open to Exercise Science majors only
Additional Fees: Course fee applies.

HES-291. Special Topics in Exercise Science. 1 Credit.
LECT 2 hrs., LAB 3 hrs.
A course that examines selected topics or issues in Exercise Science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Exercise Science.

HES-292. Special Topics in Exercise Science. 1 Credit.
LECT 2 hrs.
A course that examines selected topics or issues in Exercise Science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: HES-111.

Hebrew (HBR)

Courses

HBR-111. Elementary Modern Hebrew I. 3 Credits.
LECT 3 hrs.
Not intended for native speakers. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. The cultural context of the language is also explored.
HBR-112. Elementary Modern Hebrew II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Hebrew expand their study of basic Hebrew script, pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes future tense, commands, the infinitive, declension of direct object pronouns, regular and irregular verbs. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Hebrew language proficiency. The cultural context of the language is also explored.
Prerequisites: HBR-111 or permission of department chair.

History (HIS)

Courses

HIS-113. Early Modern Europe. 3 Credits.
LECT 3 hrs.
This course examines the transition from Medieval to Early Modern Europe. Included in the investigation are the Protestant Reformation and ensuing Catholic Counter-Reformation, and the causes and the consequences of the rise of the modern nation-state and the Enlightenment. It also traces the events precipitating the French Revolution and its aftermath.

HIS-114. Modern Europe. 3 Credits.
LECT 3 hrs.
This course surveys Europe since the French Revolution, including the nationalistic, liberal and socialist revolutions of the 19th and 20th Centuries. It investigates imperialism and the power struggles among Europe’s established and newly emerged states culminating in World War I. It also examines the Paris Conference, Europe between the two wars, and the rise of European fascism, communism, World War II and its aftermath.

HIS-117. The Ancient World-Greece and Rome. 3 Credits.
LECT 3 hrs.
This course familiarizes the student with the cultural heritage of the ancient civilizations of the Mediterranean world, including Egypt, Greece and Rome. By the end of this course, the student should be able to demonstrate an understanding of the most important political, social, economic and cultural developments of the Mediterranean world. This course includes politics, economics, culture and religion.

HIS-118. The Middle Ages. 3 Credits.
LECT 3 hrs.
This course investigates European development from the fall of the Roman Empire to the collapse of the Byzantium in 1453. The course includes the analysis of key political, social, intellectual and economic experiences in Western Europe.

HIS-122. History of Russia. 3 Credits.
LECT 3 hrs.
The history of Russia from the Tsars to the present. Major emphasis is on the unique development of Russian culture during the Tsarist period through the collapse of the Soviet Union and post-Soviet period. Documents that reflect important developments are included.

HIS-123. History of Modern Africa. 3 Credits.
LECT 3 hrs.
This course deals with the history, politics, economics and culture of Africa from the mid-1880s to the present. It provides an analysis of colonialism, nationalism and transfer of power, nation building and economic development, and the international relations of African states.

HIS-147. History of Modern East Asia. 3 Credits.
LECT 3 hrs.
A survey of modern East Asia including the impact of the West, the modernization of Japan, the origin and growth of the Chinese Communist Party and the Vietnam War.

HIS-148. Modern Middle East. 3 Credits.
LECT 3 hrs.
An examination of the historical development of the Middle East with emphasis on the 20th century. Topics covered include the development of nationalism, Pan-Arab movements, Muslim fundamentalism and the Arab-Israeli conflicts.

HIS-149. History of New Jersey. 3 Credits.
LECT 3 hrs.
This course covers the history of the state from colonial times to the present. It emphasizes the lives of ordinary people as well as significant events and uses local history as a way of learning more about American history.

HIS-151. Latin American History. 3 Credits.
LECT 3 hrs.
A survey of the historical development of Latin America focusing on its African multicultural and multi-ethnic populations and its emergence as a force in the 20th century. Students examine original documents in order to analyze the structure of social, economic and cultural relationships. Special attention is paid to the development of Argentina, Mexico and the Caribbean nations and their relationship to the United States.

HIS-160. History of Colonial and Revolutionary America. 3 Credits.
LECT 3 hrs.
This course surveys the origins and development of the English colonies in America, from the earliest settlements through the Revolution and the Constitutional Convention of 1787. Major topics explored include population growth, territorial expansion, colonial ideas and institutions, the development of English imperial policy and America's break with England.

HIS-164. Civil War and Reconstruction. 3 Credits.
LECT 3 hrs.
This course examines slavery and the other issues and events leading to the Civil War. Attention is focused on the political, economic, social and cultural developments of the era as well as on the war and the Reconstruction period.

HIS-166. Emergence of America - U.S. History I. 3 Credits.
LECT 3 hrs.
This course examines the first half of American history from the earliest settlements to the end of the 19th century with an emphasis on American expansion and settlement of the Continent and America's frontier heritage.
HIS-167. Twentieth Century American History - U.S. History II. 3 Credits.
LECT 3 hrs.
This course surveys the domestic history and foreign policy of the United States in the 20th century. The nation's immigrant experience, political development, urbanization, economic progress and emergence as a superpower are among the topics explored.

HIS-180. The Ancient World - Honors. 3 Credits.
LECT 3 hrs.
This course is a study of the ancient civilizations of the ancient Mediterranean world. The course provides an analysis of political, intellectual, economic and religious developments, and also includes the use of primary sources in translation.
Prerequisites: Permission of department chair or honors advisor.

HIS-181. The Middle Ages-Honors. 3 Credits.
LECT 3 hrs.
This course allows students to investigate major events, as well as significant economic, social and political developments in both Western Europe and non-Western countries. Participants have the opportunity to read and examine primary sources in translation and scholarly monographs.
Prerequisites: Permission of department chair or honors advisor.

HIS-183. Modern Social Thought - Honors. 3 Credits.
LECT 3 hrs.
Covers selected topics in the period from the 17th century through contemporary time. Readings of representative social science thinkers are related to their historical context so that students gain an appreciation of the causal reciprocity which exists among theory, practice and culture.
Prerequisites: Permission of department chair or honors advisor.

HIS-184. Early Modern Europe - Honors. 3 Credits.
LECT 3 hrs.
This course allows students to investigate major events, as well as analyze significant economic, social, cultural and political ideas and themes through the investigation of primary documents in translation. The course covers European history during the period from 1350 to 1789.
Prerequisites: Permission of department chair or honors advisor.

HIS-185. Modern Europe - Honors. 3 Credits.
LECT 3 hrs.
This course allows students to investigate major events, as well as analyze significant economic, social, cultural and political ideas and themes through the investigation of primary documents in translation. This course covers European history during the period from 1789 to the present era.
Prerequisites: Permission of department chair or honors advisor.

HIS-203. History of Minorities in U.S.. 3 Credits.
LECT 3 hrs.
An historical survey of major ethnic and racial minorities in the United States and the development of cultural pluralism. Emphasis is on the period since the Civil War, with attention to the role played by the various minorities in the nation's economic, political and cultural development and the status of these minority groups.

HIS-204. History of the African-American Experience. 3 Credits.
LECT 3 hrs.
A survey of African-Americans from their African origins to the present. Emphasis is on the historical importance of the slavery experience, the black in the Civil War and Reconstruction era, and the development of segregation. Special attention is given to 20th century black contributions to American life and thought, black leadership issues and movements relevant to the black experience.

HIS-209. History of American Women. 3 Credits.
LECT 3 hrs.
This course examines American women's experience from the colonial era through the contemporary feminist movement, including study of such key topics as the first women's movement, the suffrage and birth control movements, and concludes with understanding the conflicts and accomplishments inherent in women's status today.

HIS-210. History of American Women - Honors. 3 Credits.
LECT 3 hrs.
This course examines American women's experience from the colonial era through the contemporary feminist movement, including study of such key topics as the first women's movement, the suffrage and birth control movements, and concludes with understanding the conflicts and accomplishments inherent in women's status today. Emphasis is on student presentation of monographs by nationally known scholars, evaluation of competing interpretations of the past and completion of a primary source research paper.
Prerequisites: Permission of department chair or honors advisor.

HIS-246. America's Rise to World Power. 3 Credits.
LECT 3 hrs.
This course traces the development of the foreign policy of the United States from the Spanish American War to the present. It examines the emergence of the United States as a world power and the changing nature of its relationship with the rest of the world in the 21st century.

HIS-247. History of the American City and Suburb. 3 Credits.
LECT 3 hrs.
A survey of the development of the American city from colonial times to the present, with concentration on the period since the Civil War. The problems facing urban America today and the exodus to the suburbs also are emphasized.

HIS-291. Special Topics in History. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in history. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in History.

HIS-292. Special Topics in History. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in history. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in History.
Courses

HOS-100. Serv-Safe Food Handling. 1 Credit.
LECT 1 hr.
Students are introduced to the basic principles and guidelines of sanitation and food safety in a professional food service environment. Topics include foodborne illness, microbiology, food allergens and facility sanitation. This course provides the foundation to begin work in a safe food production environment. Included in the course is the opportunity to receive one NRAEF Certificate (ServSafe Food Handling) towards the ManageFirst Certification.

HOS-101. Introduction to Food. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
The modern kitchen offers a multitude of opportunities to explore the world of food. From the equipment available to the bounty of fresh and processed foods that can be obtained and prepared by both the novice and the more experienced cook, this course presents an introduction to the culinary arts. While the topics are basic, the course is also a foundation to more advanced studies in food.
Additional Fees: Course fee applies.

HOS-102. Food Management. 3 Credits.
LECT 3 hrs.
The management of food and related costs in the professional environment is an underlying factor throughout the hospitality industry. This course provides the framework from which to examine any organization and understand the principles by which they operate and manage food production. Included in the course is the opportunity to receive one NRAEF certificate in Principles of Food and Beverage Management towards the ManageFirst Certification.

HOS-103. Food Production. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
The production of food in the professional environment is a demanding and time-consuming process which requires great skill. This course provides the framework from which to examine any organization and understand the principles and processes by which they prepare and manage food production. Included in the course is the opportunity to receive one NRAEF Certificate in Food Production towards the ManageFirst Certification.
Prerequisites: HOS-101 or equivalent
Corequisites: HOS-101 or equivalent
Additional Fees: Course fee applies.

HOS-105. Food Science and Nutrition. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course covers the role of nutrition in food and health and the impact nutrition has on the food service industry. Students learn basic nutrition concepts and discuss current findings and controversies. Topics include foods, labels, recipes and menus for nutritional benefits, and plan diets. In laboratory sessions, students apply their knowledge of nutritional concepts to make healthier food. Included in the course is the opportunity to receive one NRAEF Certificate (Nutrition) towards the ManageFirst Certification.
Prerequisites: HOS-100
Corequisites: HOS-100
Additional Fees: Course fee applies.

HOS-106. Success in Hospitality. 1 Credit.
LECT 1 hr.
This course is designed to offer first-year students in Hospitality a comprehensive approach to success at CCM and in future career endeavors in the Hospitality Industry. An introduction to academic responsibility and personal growth will lead to thoughtful consideration of career goals. The planning, defining and organizing for success will be addressed on an individual basis in relation to the educational and career goals at CCM and in the future.

HOS-111. Conversational Spanish in Hospitality. 1 Credit.
LAB 2 hrs.
Topics covered in this course focus on the importance of building a welcoming work environment and encouraging diversity with a Spanish-speaking employee. The hospitality industry includes hotels, restaurants, banquet halls, hospitals, schools, office buildings, government buildings, cruise ships and operate in both the private and public sectors. The positions found in these establishments range from top-management to entry-level. Many of the positions are filled by Spanish-speaking workers who have the skills to fulfill the job requirements; however, many do not speak English. The industry is recognizing this communication barrier among their employees, and the purpose of this class is to help the student become better acquainted with the Spanish language in the hospitality industry focusing on vocabulary and grammar.

HOS-117. Introduction to Baking. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This is an introductory course in baking. The class introduces the student to the fundamental principles within a bakeshop and pastry kitchen. The student learns the basic baking ingredients and how they are used; weights, measurements, equipment and importance of accuracy; and basic procedure common to bakery formulas.
Student create and bake breads, quick breads, muffins and assorted pies.
Additional Fees: Course fee applies.

HOS-118. Introduction to the Hospitality Industry. 3 Credits.
LECT 3 hrs.
A survey course of the hospitality industry which provides students with an overview of the role of management within the profession. Fundamentals of lodging management including luxury, convention, all-suite, gaming and resort hotels, and food service management, including restaurants, catering, and institutional and business food service are studied. In addition, travel and tourism, recreation and leisure management (theme parks, clubs and public parks), meeting and event sales, planning and management, senior living services and support infrastructure, and casino and gaming management, as the balance of the eight areas which comprise the main business segments of the hospitality industry, are studied. Basic concepts of ownership, franchising, management, human resources, marketing, cost control, facilities management, service and career opportunities are examined.
HOS-120. Hotel/Hospitality Management. 3 Credits.
LECT 3 hrs.
This course provides Hospitality Management students and aspiring hotel management professionals within the industry strong conceptual management underpinnings while addressing the unique requirements of lodging managers. Students are taken on a department-by-department tour of a full-service hotel. The organization and operation of lodging properties are analyzed from the perspective of the front office manager. This course combines discussions of hotel departmental managerial responsibilities, roles and practices with information directly relevant to careers in lodging management. Students learn about the procedures effective managers use to ensure their hotels and, thus, their own ultimate success.

HOS-121. Advanced Baking. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course is a continuation of the baking methods and formulas presented in Introduction to Baking. Students prepare a variety of cakes and icings and learn to apply a variety of decorating styles and techniques. In addition, students create advanced yeast bread, pies, tarts, mousses and chocolates. Emphasis is also placed on dessert plating and presentation which will be covered during the combined lecture and laboratory classes.
Prerequisites: HOS-117
Additional Fees: Course fee applies.

HOS-123. International Cuisines. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
The study of the world of food and the cuisines of different cultures is one of the growing trends in the United States. Our modern culture brings together a multitude of different possibilities in the kitchen and is a fascinating and wide-ranging study of both practice and theory. This class will prepare menu items from around the world to delight the mind and expand the individuals cooking experience in a production kitchen.
Additional Fees: Course fee applies.

HOS-126. American Regional Cuisine. 1 Credit.
LAB 2 hrs.
American Regional Cuisine celebrates the diversity, distinction and delectable essences of American cooking. Organized by region, these recipes are drawn from every part of the menu, offering a range of complete meals for each culinary style.
Additional Fees: Course fee applies.

HOS-127. Italian Cuisine. 1 Credit.
LAB 2 hrs.
From savory soups to sweet desserts, students study Italian cooking in the same manner as a typical menu. Recipes are drawn from every part of the meal and offer a wide range of culinary styles. The course provides a fascinating introduction to the widely diverse cuisine of Italy.
Additional Fees: Course fee applies.

HOS-128. Chinese Cuisine. 1 Credit.
LAB 2 hrs.
Chinese cooking is one of the world’s oldest continuous culinary traditions, developed over the course of 4,000 years. A subject of profound importance for countless generations of Chinese philosophers, scholars, poets and ordinary people, the selection, preparation and consumption of food is much more than a matter of sustenance in Chinese tradition. This course examines several of these factors while preparing and sampling traditional Chinese dishes.
Additional Fees: Course fee applies.

HOS-129. Latin Cuisines. 1 Credit.
LAB 2 hrs.
Latin Cuisines investigates the origins of Iberian, Caribbean, Central and South American cooking and develops the student knowledge of these areas. The many similarities are only a starting point for the incredible diversity that is modern Latin Cuisine. The class will produce full Latin menus based on different periods and areas of the global community.
Additional Fees: Course fee applies.

HOS-201. Marketing and Event Planning. 3 Credits.
LECT 3 hrs.
The field of event planning is one of the most exciting and dynamic aspects of the hospitality industry. In order to be successful, the marketing of not just the business but also the individual is of primary importance. This course offers the opportunity to experience actual event planning while also studying menu, restaurant and personal marketing in relation to the hospitality industry. The course also offers potential certification in one NRAEF ManageFirst certificate in Hospitality and Restaurant Marketing.

HOS-210. Dining Room Management. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Practical training in the operations and practices of a modern dining room. Students will learn the techniques needed to work and succeed as a management professional in the dining environment. The importance of customer service will culminate with the operation of a theoretical restaurant and individual catering experiences as Dining Room staff and management.
Prerequisites: HOS-102
Additional Fees: Course fee applies.

HOS-211. Human Resource Management in the Hospitality Industry. 3 Credits.
LECT 3 hrs.
This course applies human resource management principles to the hotel and restaurant industry. Topics covered include recruitment, training, motivation, job descriptions and alternative personnel policies. The course emphasizes the vital role of the diversity within the industry. Students will consider human resources in the context of a complete operating business. Included in the course is the opportunity to receive one NRAEF Certificate in Human Resources towards the ManageFirst Certification.
HOS-213. Food and Beverage Purchasing and Cost Controls. 3 Credits.
LECT 3 hrs.
A more advanced course dealing with the concepts of selection and procurement in the hospitality industry. Special emphasis is given to food cost, the purchasing function, procurement and inventory controls. In addition, forecasting, budgeting, cash management, and profit and loss statements also are studied. Included in the course is the opportunity to receive two NRAEF certificates (Inventory and Purchasing and Controlling Foodservice Costs) towards the ManageFirst Certification.

HOS-215. Bar and Beverage Service Management. 3 Credits.
LECT 3 hrs.
A comprehensive study of food and beverage managerial principles, with an emphasis on alcoholic beverages. The manufacture, distribution, control procedures, legal aspects, integrity issues and the responsible service of alcoholic beverages are studied. Students gain product knowledge of distilled spirits, wines and beers, including an examination of contemporary non-alcoholic beverage alternatives. The opportunity for two NRAEF certificates is included in the course (Serv-Safe Alcohol and Bar & Beverage Management).

HOS-221. Cooperative Work Experience Hospitality (45-100 Hours). 1 Credit.
COOP 1 hr.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 45 and 100 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-222. Cooperative Work Experience Hospitality (90-200 Hours). 2 Credits.
COOP 2 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 90 and 200 hours in duration. The course may be taken in fulfillment of a requirement or as an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-223. Cooperative Work Experience Hospitality (135-300 Hours). 3 Credits.
COOP 3 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 135-300 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-224. Cooperative Work Experience Hospitality (135-300 Hours). 3 Credits.
COOP 3 hrs.
This course provides students enrolled in the Hospitality programs with job-oriented training and practical work experience in a work environment prior to permanent employment amounting to between 135-300 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: Permission of department chair
Corequisites: HOS-224.

HOS-227. Internship Work Experience Hospitality (45-100 Hrs). 1 Credit.
LECT 1 hr.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 45 and 100 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.

HOS-228. Internship Work Experience Hospitality (90-200 Hours). 2 Credits.
LECT 2 hrs.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 90 and 200 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.

HOS-229. Internship Work Experience Hospitality (135-300 Hours). 3 Credits.
LECT 3 hrs.
This course provides students enrolled in the Hospitality Management and Culinary Arts Programs with job-oriented training and practical work experience in an unpaid work environment prior to permanent employment and amounting to between 135 and 300 hours in duration. The course may be taken in fulfillment of a requirement or an elective in the Hospitality curricula. Students desiring to participate in this experience should make their intention known to the department chair at the beginning of their second semester.
Prerequisites: HOS-106 and permission of department chair.
HOS-232. Principles of Travel and Tourism. 3 Credits.
LECT 3 hrs.
Principles of travel and tourism offer Hospitality Management majors, other students, and aspiring travel and tourism professionals a comprehensive overview of the principles, practices and philosophies of this interdisciplinary segment of the hospitality industry. Major concepts, including the economics, history, career opportunities, global perspective, worldwide organizations, modes of travel and related services, providers and destination pursuits, are studied.

HOS-233. Food as Art. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
This course introduces students to the art of food styling, food photography, garde manger and cake decoration. Topics covered include how to prepare, arrange, preserve food photo shoot, techniques on how to prepare pâtés, terrines and fresh cheese. This course covers the art and science of cake preparation, assembly and decoration. Students have the opportunity to create a portfolio of work.
Prerequisites: HOS-100, HOS-101, HOS-102
Additional Fees: Course fee applies.

HOS-234. Meeting and Event Sales, Planning, and Management. 3 Credits.
LECT 3 hrs.
Meeting and Event Sales, Planning and Management offers Hospitality Management majors, other students and aspiring professionals in this discipline an in-depth study of generally accepted principles and practices in this segment of the hospitality industry. Career opportunities, corporate meeting planning, catering organization and administration, and other various types of meetings and events are examined.

HOS-239. Independent Study-Hospitality Industry. 3 Credits.
LECT 3 hrs.
This course is an independent work/study designed for the student on a topic that is selected in accordance with academic standards and dependent upon department chair approval.
Prerequisites: Permission of department chair.

Human Services (HMS)

Courses

HMS-215. Introduction to Social Welfare and Human Services. 3 Credits.
LECT 3 hrs.
An introduction to the goals, values and philosophy of social work as a profession. Examines the relationship between attitudes and values, economic, political and cultural conditions, and the evolution of social welfare services focusing attention on the historical developments of social services in the United States. Provides understanding of the basic elements of the client-worker relationship.

HMS-216. Human Needs and Social Services. 3 Credits.
LECT 3 hrs.
This course presents a conceptual framework through which human behavior is systematically understood. It explores the needs of people as determined by their biological and psycho/social growth and development, and by their special relationship to society and its problems. The means by which these needs can be met by the social welfare system also are presented.

International Studies (ISA)

Courses

ISA-110. Intercultural Communication. 3 Credits.
LECT 3 hrs.
This course explores the theory and practice of communication between individuals or groups from different cultures. Topics include a basic theoretical foundation in culture and communication, cultural values, worldview, verbal/nonverbal communication, cultural identity and intercultural competence.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

ISA-215. A Survey of Islam. 3 Credits.
LECT 3 hrs.
This course covers the central beliefs and practices of Islam, one of the major world religions. It analyzes passages in the Qur’an and their often varied interpretations among the Muslim community. It studies the life of the Prophet Muhammad and highlights of Muslim history, examines the divisions between Sunni and Shiite Muslims, explores diverse schools of Sharia (Islamic Law), and shows the large common ground Islam shares with Christianity and Judaism in its belief in one God, major prophets, stories and ethical beliefs. Finally, the course analyzes current events in Muslim countries, especially in the Middle East.

Italian (ITL)

Courses

ITL-111. Elementary Italian I. 3 Credits.
LECT 3 hrs.
Not intended for students with two or more years of high school Italian. See department chair. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar, including present tense, prepositions and possessive adjectives. This course covers greetings, introductions, weather, describing people and places, talking about classes, family and other daily activities. The course is designed as part of four semesters of complete language study.

ITL-112. Elementary Italian II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Italian expand their study of basic Italian pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes past tenses, irregular present tense. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Italian language proficiency. The cultural context of the language is also explored.
Prerequisites: ITL-111 or permission of department chair.
ITL-211. Intermediate Italian I. 3 Credits.
LECT 3 hrs.
This course is intended for students whose study of the first year of this language is recent and who wish to acquire new skills in the language. As a continuation of grammar, double object pronouns, the comparative and superlative forms, the study of the future tense and the conditional forms are introduced. It also includes a review of grammar. Higher emphasis is given to conversation. Some short compositions are required.
Prerequisites: ITL-112 or permission of department chair.

ITL-212. Intermediate Italian II. 3 Credits.
LECT 3 hrs.
This course expands the Italian vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Italian language. Grammar study includes a review of all verb tenses, the comparative and superlative forms, and the study of the subjunctive mood in all tenses. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Italian language proficiency. The cultural context of the language is also explored.
Prerequisites: ITL-211 or permission of department chair.

ITL-221. Italian Conversation and Literature I. 3 Credits.
LECT 3 hrs.
Intensive practice in speaking everyday Italian. Oral and written reports and discussions based on readings from Italian literature.
Prerequisites: ITL-212 or permission of department chair.

ITL-222. Italian Conversation and Literature II. 3 Credits.
LECT 3 hrs.
This course focuses on highly advanced vocabulary and sentence structure for both everyday and academic Italian. Oral and written reports and discussions based on advanced readings from Italian literature.
Prerequisites: ITL-221 or permission of department chair.

ITL-291. Special Topics in Italian. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Italian. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in Italian or permission of department chair.

ITL-292. Special Topics in Italian. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Italian. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in Italian or permission of department chair.

Japanese (JPN)

Courses

JPN-111. Elementary Japanese I. 3 Credits.
LECT 3 hrs.
Not intended for students with two or more years of high school Japanese. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. Kana writing system and some Kanji writing characters are introduced at this stage.
Prerequisites: JPN-111 or permission of department chair.

JPN-112. Elementary Japanese II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Japanese expand their study of basic Japanese language, script, pronunciation, vocabulary and grammar of an elementary nature. Grammar includes study of basic syntactical structures. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Japanese language proficiency. The cultural context of the language is also covered. At least 56 Kanji characters are introduced at this stage.
Prerequisites: JPN-112 or permission of department chair.

JPN-211. Intermediate Japanese I. 3 Credits.
LECT 3 hrs.
The course is intended for students whose study of the first year of this language is recent and who wish to hone their skills. Students continue to study Kanji characters. Emphasis is given to vocabulary, grammar, listening, speaking, reading and writing in an effort to enhance Japanese language proficiency. Some readings and compositions on cultural subjects are included.
Prerequisites: JPN-112 or permission of department chair.

JPN-212. Intermediate Japanese II. 3 Credits.
LECT 3 hrs.
This course expands the Japanese vocabulary, grammar, reading and writing skills of those students wishing to attain intermediate knowledge of the Japanese language. Students continue to learn more Kanji characters. Vocabulary and grammar support listening, reading and writing in an effort to enhance Japanese language proficiency. The cultural context of the language is also covered. Some readings and compositions on cultural subjects are included.
Prerequisites: JPN-211 or permission of department chair.

Landscape and Horticultural Technology (LHT)

Courses

LHT-101. Introduction to Turf Management. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Intended to provide students with the skills needed to professionally manage turf facilities including golf courses, recreational and athletic fields. Topics include turf establishment and reseeding, turf management, turf maintenance, irrigation, control of turf pests and maintenance of turf areas. This course may be eligible for New Jersey Pesticide Recertification Credits in both core and selected categories. This course is offered as a traditional face-to-face course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.
LHT-108. Herbaceous Plant Materials. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Teaches field identification techniques for herbaceous plants including annuals, biennials and perennials. The installation, selection and uses of herbaceous plants in a landscape, maintenance of herbaceous plants, and the selection of tools and equipment in the maintenance of herbaceous landscape plants are also included. This course is offered as a face-to-face course with an online supplement and also as a hybrid course.
Additional Fees: Course fee applies.

LHT-110. Plant Science. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Plant Science includes studying the effects of the environment on plant growth and development, plant morphology and physiology, and plant classification. Students apply theory by propagating, maintaining and studying plants using the Landscape and Horticultural Technology program greenhouse facility. This course is offered as a traditional face-to-face course with an online supplement, as an online course or as a hybrid online course.
Additional Fees: Course fee applies.

LHT-111. Introduction to Horticulture. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Plant production, plant propagation, greenhouse management and marketing of bedding plants represent the major topics of study. Students apply classroom theory by producing both annual and perennial plants from seed, cuttings and division. Commercial production techniques are emphasized, including professional greenhouse management. This course is offered as a traditional face-to-face course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.

LHT-114. Landscape Plant Identification, Management and Use. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course focuses on field identification techniques applied to the study of woody plant material including trees, shrubs, groundcovers and vines. Both conifer and deciduous plants are covered. The landscape uses of plants and the factors which should be used to guide plant selection are also discussed. Over 100 species of woody plant material are studied including trees, shrubs, vines and groundcovers. The County College of Morris campus, local garden centers and arboreta of the Morris County Park Commission are all used for field study. This course is offered as a traditional face-to-face course, as an online course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.

LHT-115. Horticultural Computer Software Applications. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Improves technical literacy by familiarizing students with the most effective ways to use the computer as a tool for online research, landscape design, landscape imaging and digital presentation development. Computer-assisted drafting is a major focus, and students also are introduced to GPS and GIS technology applications in agriculture. Students are provided with the opportunity to achieve competence in the selection and use of horticultural computer software. This course includes an online supplement and also offers students the opportunity to lease or purchase landscape design software at a significant discount.
Additional Fees: Course fee applies.

LHT-116. Horticultural Soils. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
The origin, composition and management of soils, including study of the physical and chemical properties with emphasis on ion exchange processes, soil classification, soil amendments and biological processes that occur in the soil. The lab provides students with the opportunity to learn how to analyze and evaluate soil productivity including nutrient and pH levels as well as texture and structure. The emphasis throughout the course is on the development of problem-solving abilities which can be applied to field work. Students are required to complete a semester project which requires that they analyze the suitability of soils in an assigned area. This course is offered as a face-to-face course which includes an online supplement or as a hybrid online course.
Additional Fees: Course fee applies.

LHT-124. Grounds Maintenance and Development. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course provides students with the skills needed to professionally manage exterior environments. Topics include turf and landscape plant management, irrigation, control of landscape pests, winter property management and maintenance of landscape construction features as well as the maintenance of grounds equipment. This course is offered as a face-to-face course with an online supplement and as a hybrid online course.
Additional Fees: Course fee applies.

LHT-211. Landscape Design and Planning I. 3 Credits.
LECT 1 hr., LAB 6 hrs.
Class instruction emphasizes the theory, principles and practices of design and planning, effective use of plant materials, artistic consideration of form and function, and basic drawing and drafting techniques. Students learn to apply the design process as a problem-solving technique to produce finished designs. The process of design is a major focus and students are also taught presentation techniques. Sustainable practices are infused throughout the course. This course is offered as a face-to-face course with an online supplement or as a hybrid online course. Student project work is posted online using a free online portfolio system.
Prerequisites: LHT-114 or permission of department chair
Additional Fees: Course fee applies.

LHT-212. Landscape Design and Planning II. 3 Credits.
LECT 1 hr., LAB 6 hrs.
A continuation of Landscape Design and Planning I. Class instruction focuses on problem-solving for difficult sites, including designing for slopes, sustainability, landscape lighting design, cultural influences on design and specialty garden design. Cost estimation, presentation skills and GPS applications are also covered. This course is offered as a face-to-face course with an online supplement or as a hybrid online course.
Prerequisites: LHT-211 or permission of department chair
Additional Fees: Course fee applies.
LHT-215. Plant Pest Management. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Teaches insects, diseases and weeds that are recognized as pests of ornamental plant materials and turf areas. The nature, structure and function of insect body parts, and the growth, habits, injurious effects and life cycles of pest organisms are studied in detail. Pesticides, regulations governing pesticide use and methods of selection and application are discussed with an emphasis on safety. Integrated Pest Management (IPM) techniques are stressed and students apply an understanding of IPM techniques to both greenhouse and landscape management. This course may be eligible for New Jersey Pesticide Recertification credits in both core and selected categories. This course is offered as a face-to-face course with an online supplement and as either a hybrid or online course.
Prerequisites: LHT-110 or LHT-111 or permission of department chair
Additional Fees: Course fee applies.

LHT-231. Landscape Construction and Equipment. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Course emphasizes state-of-the-art landscape construction and installation techniques, surveying techniques and the safe operation and maintenance of landscaping equipment. Utilizing the well-equipped Landscape and Horticultural Technology facility, this course provides the student with extensive hands-on instruction in hardscape installation and also focuses on teaching students the value of professional certification programs. This course is offered as a face-to-face course with an online supplement and as a hybrid online course.
Additional Fees: Course fee applies.

LHT-233. Cooperative Agricultural Experience. 3 Credits.
COOP 3 hrs.
Recognizing that hands-on, real-work experience is invaluable to LHT students, this course provides students enrolled in the Landscape and Horticultural Technology program with on-the-job training and work experience prior to graduation. In order to successfully complete this course, students must be employed within the landscape or horticultural profession and satisfactorily complete a minimum of 300 hours on the job. Students must have minimum 2.0 GPA and completion of 25 credits in Agribusiness, Landscape Management and Design or Turf and Turfgrass Management programs to be eligible to enroll.
Prerequisites: Permission of department chair.

LHT-234. Landscape and Turf Installation. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is intended to provide students with the skills and knowledge needed to succeed as landscape and turf installers and managers. Skills developed include surveying, understanding grading and drainage, and installation techniques for both landscape plants and turf. This course may be eligible for New Jersey Pesticide Recertification credits in both core and selected categories. This course is offered as a face-to-face course with online enhancements and as a hybrid online course.
Prerequisites: LHT-101 or LHT-110 or LHT-111 or LHT-124 or permission of department chair
Additional Fees: Course fee applies.

LHT-235. Irrigation Systems. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is intended to provide the student with a general understanding of the components, use and function of irrigation systems. By completion of this course, the students are able to operate, maintain and repair irrigation systems. This course is offered as a face-to-face course with an online supplement or as a hybrid course.
Additional Fees: Course fee applies.

LHT-291. Special Topics in Agriculture I. 3 Credits.
LECT 3 hrs.
This course is an independent study course which involves students in an individualized course of study designed to fit each student's program of study and career goals. There is an online supplement for this course.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

LHT-292. Special Topics in Agriculture II. 3 Credits.
LECT 3 hrs.
This course is the second independent study course of a two semester sequence which involves students in an individualized course of study designed to fit each student's program of study and career goals. There is an online supplement for this course.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

Latin (LAT)

Courses

LAT-111. Elementary Latin I. 3 Credits.
LECT 3 hrs.
Not intended for students with two or more years of high school Latin. This course is intended for students with no prior knowledge of, or with limited background in, the language. It includes basic grammar and vocabulary, selected readings with stress on syntax, and the relationship of Latin grammar to English grammar.

LAT-112. Elementary Latin II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Latin expand their study of basic Latin vocabulary and grammar of an elementary nature. Grammar study includes third and fourth conjugation and third and fourth declension, pluperfect and future tenses, and the ablative case. Vocabulary and grammar support readings with stress on syntax, and the relationship of Latin grammar to English grammar.
Prerequisites: LAT-111 or permission of department chair.

Marketing (MKT)

Courses

MKT-113. Principles of Marketing I. 3 Credits.
LECT 3 hrs.
This is an introduction to basic principles and practices in marketing. The course provides an overview of the field of marketing in areas of consumer behavior, marketing management and channels of distribution and emphasizes the growth of the marketing concept.
MKT-114. Principles of Marketing II. 3 Credits.
LECT 3 hrs.
This course provides students with a usable managerial understanding of consumer behavior. This will help students prepare for careers in marketing management, sales and advertising.
Prerequisites: MKT-113.

MKT-214. Marketing Management. 3 Credits.
LECT 3 hrs.
This course is an integrated and analytical approach to marketing management combining text, lecture and current business events. Case studies will be utilized to aid students in developing marketing planning and honing decision making skills. Emphasis will focus on utilization of the marketing tools in order to maximize marketing goals.
Prerequisites: MKT-113.

MKT-215. Sales Principles and Practices. 3 Credits.
LECT 3 hrs.
This course examines the role of professional selling in the American economy. Customer needs and buying motives are evaluated and personal qualifications of competent salespersons are discussed. Various selling techniques are learned and simulated sales demonstrations are used to apply theories and techniques.

MKT-216. Sales Management. 3 Credits.
LECT 3 hrs.
This course explores the application of management principles to marketing departments and personnel, training and supervision of personnel, development of promotion plans and the relationship of the marketing department to the total organization.
Prerequisites: MKT-113.

MKT-218. Advertising. 3 Credits.
LECT 3 hrs., LAB 3 hrs.
This course provides a basic understanding or the business of advertising. Topics include the economics of advertising, planning and preparation of advertising, selection of media, establishing advertising objectives, coordination of advertising, sales promotion, and display, and developing an advertising budget.
Prerequisites: MKT-113, ENG-025 or non-course equivalent.

MKT-291. Special Topics in Marketing. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in marketing. Topics may differ each time the course is offered and may include areas such as retail marketing, negotiation or marketing research. Students should consult the department chairperson for further information.
Prerequisites: Permission of department chair.

MKT-292. Special Topics in Marketing. 3 Credits.
LECT 3 hrs.
This course examines selected topics or issues in marketing. Topics may differ each time the course is offered and may include areas such as retail marketing, negotiation or marketing research. Students should consult the department chairperson for further information.
Prerequisites: Permission of department chair.

Mathematics (MAT)

Courses

MAT-007. Foundations of Algebra. 2 Credits.
LECT 2 hrs.
This course integrates selected topics of arithmetic and introductory algebra, including operations on whole numbers, fractions, decimals, percent and signed numbers, linear equations and inequalities in one variable, operations on polynomials, factoring, integer exponents, and graphing. Students are required to compute a series of laboratory assignments, which are designed to reinforce concepts based on the placement test results.

MAT-009. Basic Mathematics Ia. 1 Credit.
LECT 1 hr.
Three (3) hours per day for one week. This is an intensive one-week review of topics typically found on the computation placement test. A passing grade satisfies the Basic Mathematics requirement.
Prerequisites: Appropriate score on a placement test.

MAT-010. Basic Algebra IA. 1 Credit.
LECT 1 hr.
Three (3) hours per day for one week. This is an intensive one-week review of topics typically found on the basic algebra placement test. A passing grade satisfies the Basic Algebra requirement.
Prerequisites: Appropriate score on a placement test.

MAT-011. Basic Mathematics I. 3 Credits.
LECT 3 hrs.
A preparatory course designed for students who need additional practice and review in arithmetic.

MAT-014. Basic Algebra I. 3 Credits.
LECT 3 hrs.
A preparatory course in elementary algebra which includes rational numbers, polynomials, algebraic operations, first-degree equations, graphing, systems of linear equations, problem solving and an introduction to the quadratic equations.
Prerequisites: MAT-009 or MAT-011 and permission of department chair.

MAT-016. Intermediate Algebra. 3 Credits.
LECT 3 hrs.
A second-level preparatory algebra course designed to prepare students for credit-level mathematics courses. Covered are selected topics, including systems of linear equations, polynomials, factoring, rational expressions, radicals and solving quadratic equations.
Prerequisites: MAT-007 or equivalent.

MAT-050. Fundamentals of Mathematics. 5 Credits.
LECT 5 hrs.
This course integrates selected topics of arithmetic and introductory algebra, including computation, topics in geometry, operations on signed numbers, solving linear equations in one variable, operations on polynomials, factoring, integer exponents and graphing.
Prerequisites: Appropriate score on a placement test.

MAT-060. Fundamentals of Algebra. 6 Credits.
LECT 6 hrs.
An intensive one-semester course to prepare students for credit mathematics courses. Topics include computation, polynomials, exponents, linear equations, factoring, rational expressions, radicals and solving quadratic equations.
Prerequisites: Appropriate score on a placement test or permission of department chair.
MAT-110. College Algebra. 3 Credits.
LECT 3 hrs.
An intensive course designed to prepare students for mathematics courses such as Calculus with Applications to Business and Economics and Precalculus. It covers selected algebra topics including exponents; rational expressions; polynomials, radicals, relations and functions; exponential and logarithmic functions, systems of equations.
Prerequisites: MAT-016 or MAT-060 (grade C or better) or equivalent.

MAT-113. Applied Calculus. 4 Credits.
LECT 4 hrs.
A study of topics which provides a basis for continuing courses in mathematics and the physical sciences. This course includes trigonometric, exponential and logarithmic functions; analytic geometry; differentiation and integration.
Prerequisites: MAT-110 or MAT-123 or equivalent.

MAT-117. Mathematical Analysis for Business and Economics. 3 Credits.
LECT 3 hrs.
Mathematical topics used in business and economics with emphasis on applications. Covered are polynomials, linear and quadratic models, systems of equations, matrix algebra, and linear programming including the Simplex Method.
Prerequisites: MAT-116, MAT-060 (grade C or better) or equivalent.

MAT-118. Calculus With Application to Business And Economics. 3 Credits.
LECT 3 hrs.
A course covering functions, derivatives and integration, with special consideration of applications to the business and economics areas. Partial differentiation is introduced.
Prerequisites: MAT-110 (grade C or better) or equivalent.

MAT-120. Mathematics for the Liberal Arts. 4 Credits.
LECT 4 hrs.
A course addressed to liberal arts students. Topics include the history of mathematics, probability, statistics, geometry, number theory, algebra, graphs and functions, and a choice of selected topics.
Prerequisites: MAT-007, MAT-014, MAT-050 or equivalent.

MAT-123. Precalculus. 4 Credits.
LECT 4 hrs.
An intensive one-semester course to prepare students for Analytic Geometry and Calculus, including absolute values; relations; functions; equations; inequalities; polynomial, rational, trigonometric, inverse trigonometric, exponential and logarithmic functions; trigonometric equations and identities; and graphs.
Prerequisites: MAT-110 (grade C or better) or equivalent.

MAT-124. Statistics. 3 Credits.
LECT 3 hrs.
The fundamental principles of statistical methods. Descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, elementary hypothesis testing, confidence intervals and ethical issues in statistics are included.
Prerequisites: MAT-016, MAT-060, MAT-120 or equivalent.

MAT-130. Probability and Statistics. 4 Credits.
LECT 4 hrs.
The fundamental principles of statistical methods. Descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, hypothesis testing and confidence intervals and ethical issues in statistics are included. An introduction to the use of statistical software to analyze data will be emphasized.
Prerequisites: MAT-016, MAT-060 or MAT-120 or equivalent.

MAT-131. Analytic Geometry and Calculus I. 4 Credits.
LECT 4 hrs.
The first semester of a three-semester sequence. Analytic geometry in the plane, differentiation and applications, and integration are covered.
Prerequisites: MAT-123 (grade of C or better) or equivalent.

MAT-132. Analytic Geometry and Calculus II. 4 Credits.
LECT 4 hrs.
A continuation of Analytic Geometry and Calculus I, which covers the calculus of inverse trigonometric functions, methods of integration, analytic geometry in the plane including polar coordinates and conic sections, hyperbolic functions, sequences and series, and parametric equations.
Prerequisites: MAT-131 (grade of C or better) or equivalent.

MAT-140. Math for Radiographers. 1 Credit.
LECT 1 hr.
This course discusses the math skills that are crucial in the healthcare environment. It teaches the basis measurements, calculations, percents, ratios, and proportions, scientific notation, metric conversions, basis algebraic principles and basic geometric principles used in Radiology. It reviews whole numbers, fractions, decimals and exponents. Radiology units and numeric prefixes are also discussed.
Prerequisites: MAT-016 or MAT-060 and admission to the Radiography program
Corequisites: RAD-100, RAD-104, RAD-107.

MAT-183. Honors Probability and Statistics. 4 Credits.
LECT 4 hrs.
An introduction to the principles of statistical methods. The course will integrate spreadsheet software to cover such topics as descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, elementary hypothesis testing and confidence intervals. The course will also cover ethical issues in statistics. Comprehensive case studies will be covered throughout the semester. An introduction to the use of statistical software to analyze large data sets will be emphasized.
Prerequisites: Permission of department chair or honors advisor.

MAT-210. Probability and Statistics II. 4 Credits.
LECT 4 hrs.
This course is a continuation of statistical analysis from Probability and Statistics. Techniques for collection and analysis of data emphasizing estimation and hypothesis testing, analysis of variance and regression analysis are included. Also included are nonparametric testing and an introduction to multiple regression. A focus on analyzing large data sets using statistical software.
Prerequisites: MAT-124 or MAT-130 or MAT-183 or equivalent (grade of C or better).
MAT-225. Discrete Mathematics. 4 Credits.
LECT 4 hrs.
This course is for mathematics and computer science majors. An introduction to discrete mathematics. Topics include logic, Boolean algebra, mathematical proofs, sets, functions, sequences, graphs, number theory, recursion, mathematical induction, introductory combinatorics, and discrete probability. Emphasis on applications to foundations of computer science.
Prerequisites: MAT-131.

MAT-228. Linear Algebra. 3 Credits.
LECT 3 hrs.
Selected topics including matrices and determinants, vectors and vector spaces, linear transformations, eigenvalues and eigenvectors, with applications from a variety of disciplines.
Prerequisites: MAT-132 (grade of C or better) or equivalent.

MAT-230. Calculus III. 4 Credits.
LECT 4 hrs.
A continuation of Analytic Geometry and Calculus II which includes analytic geometry in three dimensions, functions of several variables, partial derivatives, multiple integrals, vectors and an introduction to vector analysis.
Prerequisites: MAT-132 (grade of C or better) or equivalent.

MAT-270. Numbers and Operations for Middle Grades. 3 Credits.
LECT 3 hrs.
This course prepares middle-grades mathematics teachers with a concrete understanding of numbers, number systems, operations with fractions, decimals and percent; there is special consideration to ratios, proportions, factors and multiples and including instructional techniques and calculator-structured lessons.
Prerequisites: Permission of department chair.

MAT-271. Algebra for Middle Grades. 3 Credits.
LECT 3 hrs.
This course explores topics from pre-algebra and algebra. The course prepares middle-grades mathematics teachers with a concrete understanding of patterns, relationships and functions, polynomials, algebraic operations, first degree equations, graphing and systems of linear equations and linear inequalities and including instructional techniques and calculator-structured lessons.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.

MAT-272. Mathematics for Middle Grades. 3 Credits.
LECT 3 hrs.
This course explores topics including history of mathematics, algebra, probability and statistics while infusing instructional techniques and uses of technology.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.

MAT-273. Statistics for Middle Grades. 3 Credits.
LECT 3 hrs.
An introduction to statistical methods and reasoning as applied to practical problems. Topics include collecting and summarizing data, histograms and other types of graphs, descriptive statistics, normal distributions, sampling, surveys, use of computers in statistics and interpretation of data.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.

MAT-274. Geometry for Middle Grades. 3 Credits.
LECT 3 hrs.
This course includes topics in geometry and measurements with use of Geometer Sketchpad Software. Formulas for perimeter, area, and volume for polygons and polyhedrons, properties of parallel lines and perpendicular lines, fundamental topics of measurements, measurement instruments, measurement errors are covered while infusing instructional techniques.
Prerequisites: Permission of department chair and Elementary School or N-12 subject matter endorsement.

Mechanical Engineering Technology (MEC)

Courses

MEC-104. Statics. 3 Credits.
LECT 3 hrs.
This course provides an analysis of force systems acting on particles and rigid bodies: equilibrium in two and three dimensions; trusses, frames and machines; and friction, centroids and moment of inertia of areas.
Prerequisites: MAT-110, ENR-119 and ENR-124.

MEC-110. Materials for Engineering Technology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course covers metallic, plastic and ceramic materials that are important to manufacturing. Topics include: molecular and microscopic structures in relationship to material properties, testing of mechanical and thermal properties with reference to ASTM standards, equilibrium diagrams and physical metallurgy emphasizing steel and aluminum, heat treatment of steel, molding and forming methods for plastics. A brief study of ceramics and composites is included.
Prerequisites: MAT-007 or equivalent
Additional Fees: Course fee applies.

MEC-117. Mechanical Prototyping. 2 Credits.
LECT 1.5 hr., LAB 1.5 hr.
This course is a study of the methods of prototyping including an introduction to precision measurements, elementary theory of cutting and machining methods with emphasis on the lathe operation, milling, drilling and grinding. This course runs for eight weeks.
Additional Fees: Course fee applies.

LECT 1.5 hr., LAB 1.5 hr.
This course is a study of the methods of Computer-Aided Manufacturing (CAM) and the related field of Computerized Numerical Control (CNC). Topics include machine setup, CNC code, manual and post processed programs, rapid prototyping, tool offsets, and tool changing. This course runs for eight weeks.
Prerequisites: MEC-117 or industrial experience
Additional Fees: Course fee applies.
MEC-141. Strength of Materials for Engineering Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course studies the mathematical determination of stress and deflection for materials having applied loads of normal, shear, torsion, bending or combinations of these. The rational design of mechanical components, such as fasteners, weldments, tanks, shafts, beams and columns, to satisfy stress, deflection and stability criteria are studied. Also included are Mohr's circle and strain gauge techniques. This course is intended for Engineering Technology students; Engineering Science students should take ENR-230, Engineering Strength of Materials.
Prerequisites: MEC-104 and MAT-110
Additional Fees: Course fee applies.

MEC-155. Mechanical Components. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course develops the fundamentals of sketching, blueprint reading, dimensioning, tolerances, preferred sizes and fits, and evaluating product quality. It also introduces students to the theory of function of mechanical elements such as linkages, cam bearings, gears and chain drives, springs, brakes, clutches, welds, keys, fasteners and power screws.
Prerequisites: MAT-007 or equivalent.

MEC-204. Dynamics for Technology. 2 Credits.
LECT 2 hrs.
This course provides an understanding of the mathematics of the motion of particles and rigid bodies, and of the relation of forces and motion of particles. Upon successful completion of this course, students will describe the motion of particles and rigid bodies as functions of time and position, develop their equations of motions due to applied forces, and determine post impact behavior.
Prerequisites: MAT-110, MEC-104
Corequisites: PHY-111.

MEC-229. Cooperative Work Experience-Mechanical Engineering Technology. 3 Credits.
COOP 3 hrs.
Registration is only upon written recommendation of advisor. This course is a field experience in the laboratory facilities of an industrial firm. It is designed for students in the Mechanical Engineering Technology program to obtain industrial experience as a supplement to college studies prior to career employment. Seminar evaluation visitations are included. Completion of 25 technical credits required to enroll.
Prerequisites: Permission of department chair.

MEC-235. Kinematics. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of moving elements as used in the design and analysis of basic mechanisms in machines. Velocity and acceleration analysis on a plane, design and analysis of 4-bar linkages, cams, gears and other mechanisms using graphical and analytical methods are studied.
Prerequisites: MAT-110
Corequisites: PHY-111
Additional Fees: Course fee applies.

MEC-236. Machine Design. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is the rational design and selection of machine elements considering their economics and manufacturability. The principles of strength of materials and mechanics are applied to the design of bearings, shafts, gears, springs, brakes and other elements of importance in mechanical systems. Consideration of service criteria, operating environment and cost. Emphasis is placed on developing a systematic design philosophy.
Prerequisites: MEC-141
Additional Fees: Course fee applies.

MEC-291. Special Topics in Mechanical Engineering Technology. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Mechanical Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Mechanical Engineering Technology.

MEC-292. Special Topics in Mechanical Engineering Technology. 3 Credits.
LECT 3 hrs.
This course is an examination of selected topics or issues in Mechanical Engineering Technology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Mechanical Engineering Technology.

Media Studies (MED)

Courses
MED-110. Multimedia I. 3 Credits.
LECT 3 hrs.
Multimedia I is a survey course designed to allow students to explore, discuss, develop and use multimedia technology. This computer-based course offers an extensive overview of the technologies of multimedia. Students engage in issues related to usability, management and distribution. Topics include multimedia development and design, media elements, and emerging hardware and software trends. A multimedia prototype project that demonstrates conceptual and technical understanding is required.
Additional Fees: Course fee applies.

MED-113. Multimedia II. 3 Credits.
LECT 3 hrs.
An advanced course designed to allow students to apply the theory and basic practical knowledge presented in Multimedia I. Students apply their knowledge productions for DVD, local networks or the Internet. Students incorporate traditional media production elements such as video and audio combined with the latest features and technologies. Conceptualization, user interface design and prototyping are key course elements. A multimedia prototype project that demonstrates conceptual and technical understanding is required.
Prerequisites: MED-110
Additional Fees: Course fee applies.
MED-114. Media Aesthetics. 3 Credits.
LECT 3 hrs.
Media Aesthetics looks at the importance, influence and meaning of visual images designed for use in electronic media. Through current and historical examples, students learn the principles and significance of media aesthetics including light and color, space and structure, time and motion, and sound, and how they are used to optimize effective communication. Students learn how aesthetic elements of television and multimedia have been translated into vectors - forces that push or pull users in certain directions. Operationally, students learn how to interpret, order, clarify and intensify various communications including fiction, by applying appropriate aesthetic principles. Comparisons between television and multimedia images are closely examined. Students may apply knowledge of media aesthetics by producing projects using broadcast and digital media facilities.
Additional Fees: Course fee applies.

MED-117. Introduction to Broadcasting. 3 Credits.
LECT 3 hrs.
This course offers a historical and content analysis approach to the study of broadcast and narrowcast communications. Included are the research and study of systems, regulations, program genres, social effects on audiences, and the future of the industry. This is accomplished via lectures and discussions, handouts, reading assignments and in-class viewing and listening assignments.
Prerequisites: Placement basis or ENG-005 or ENG-022 or ENG-007.

MED-119. Digital Media Production. 3 Credits.
LECT 3 hrs.
This course provides students with theory and training in the area of digital content development for digital media productions. Software and hardware training in digital video, audio, animation and graphics are introduced. In addition, the appropriate use of these areas of content in developing digital media productions and interface design are discussed.
Additional Fees: Course fee applies.

MED-210. Digital Video Editing. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Through hands-on learning, Digital Video Editing provides students with the fundamental principles of video editing with a focus on the techniques and technology used to achieve a superior final product. An in-depth exploration of non-linear editing concepts includes a deeper understanding of primary, secondary and tertiary motion, shot types, sequencing, transitions and continuity. Students learn to log and capture raw video, assemble shots on a timeline, create, add, and edit text, audio tracks, title animation, effects, transitions, continuity and video compositing. This course is ideal for students who wish to create and edit a professional video for broadcast, webcast and other motion media venues.
Prerequisites: MED-113 or MED-211
Additional Fees: Course fee applies.

MED-211. Television Production I. 3 Credits.
LECT 3 hrs.
This course introduces students to the basic operation of a television studio and the production process. Students learn techniques and develop skills in various studio functions including camera, switching, sound, lighting, teleprompter, scriptwriting and directing. Collaboration and teamwork are emphasized.
Additional Fees: Course fee applies.

MED-212. Television Production II. 3 Credits.
LECT 3 hrs.
Students employ skills learned in Television Production I and learn advanced production skills including studio and remote producing, remote-location video shooting, digital editing, advanced special FX generation and switching, and set design via a "live on tape" production of an actual television program.
Prerequisites: MED-211
Corequisites: MED-210
Additional Fees: Course fee applies.

MED-213. Multimedia Authoring and Design. 3 Credits.
LECT 3 hrs.
Using industry-standard authoring software, students apply multimedia technology to assemble a real-world interactive multimedia project. Concepts and principles of user interface design, digital audio and video production, team production techniques and usability testing are employed. As members of a production team, students plan, manage and implement a complex multimedia production project to be used on DVD, a local network or the Internet for a participating business partner.
Prerequisites: MED-113
Additional Fees: Course fee applies.

MED-220. Animation. 3 Credits.
LECT 3 hrs.
This is an advanced production course utilizing 3D modeling and animation software to create animated imagery for video and multimedia applications. Software includes 3D Studio Max (3D animation) and Adobe Premiere and AfterEffects (digital video). Through assigned projects, students learn to combine live video and animation with compositing and bluescreening techniques.
Additional Fees: Course fee applies.

MED-224. Independent Study in Media. 3 Credits.
LECT 3 hrs.
Students, in consultation with a media advisor, undertake an in-depth analysis of a selected topic, problem or issue related to media or pursue additional media-related work experience. Students are responsible for developing a statement of goals, maintaining a weekly log and preparing a written and oral summary report. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MED-228. Cooperative Work Experience- Media Stud. 3 Credits.
COOP 3 hrs.
Actual applications of classroom learning in a supervised on-the-job training experience takes place daily. Students pursue their career objectives in the broadcasting arts or digital media area following a training plan with the assistance of the department chair and on-the-job supervisor. Interested students should consult with the Department of Information Technologies chair. Available only to Digital Media Technology majors.
Prerequisites: MED-212 or MED-213
Corequisites: MED-229.
MED-229. Cooperative Work Experience-Media Related Class. 1 Credit.
LECT 1 hr.
This course provides a variety of exercises that further develop students' technical skills, occupational adjustment and career development competencies. Exercises help to develop interpersonal and communication skills and help to ensure a positive cooperative work experience. This course is offered online. Available only Digital Media Technology majors.
Prerequisites: MED-212 or MED-213
Corequisites: MED-228.
MED-230. Media Internship. 3 Credits.
LECT 3 hrs.
Practical experience in the media career field is gained working part-time in an approved, supervised media-related environment or on an approved media-related project under the supervision of a media instructor and/or on-the-job supervisor. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair.
MED-240. Advanced Animation. 3 Credits.
LECT 3 hrs.
This advanced-level course is a continuation of MED-220 Animation and is designed to expose students to high-end 3-D modeling tools for digital animation, electronic post-production, digital special effects and digital multimedia. This course explores advanced applications in digital compositing, particle systems, Newtonian algorithms, kinemation, dynamation and 3-D characters.
Prerequisites: MED-220
Additional Fees: Course fee applies.
MED-291. Special Topics in Media. 1 Credit.
LECT 3 hrs.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
MED-292. Special Topics in Media. 3 Credits.
LECT 1 hr.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
MED-293. Special Topics in Media. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in media. Topics may differ each time the course(s) is/are offered. Students should consult the department chair for further information. Available only to Digital Media Technology majors.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

Music (MUS)

Courses

MUS-011. Basic Musicianship I. 3 Credits.
LECT 3 hrs.
A pre-music theory course designed to develop reading skills through keyboard, sight-singing and ear-training. This course may not be used as a curriculum requirement for any major. Students must pass this course or an equivalent Music Theory placement exam to register for MUS-117 Theory I.
MUS-101. Chorus I. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.
MUS-102. Chorus II. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.
MUS-103. Chorus III. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.
MUS-104. Chorus IV. 1 Credit.
LAB 4 hrs.
This course is designed to develop a high standard of choral ensemble singing. Participants perform in at least one concert each semester.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading.
Prerequisites: Permission of department chair.
MUS-110. Applied Music Secondary-Voice II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence planned to develop vocal ability and emphasizes vocal techniques, diction and sight-reading.
Prerequisites: MUS-109.
MUS-112. Introduction to Electronic Music. 3 Credits.
LECT 3 hrs.
An exploration of the physical properties of sound, synthesizers, music recording, music arrangement, and the history of electronic music.
Additional Fees: Course fee applies.
MUS-114. American Music. 3 Credits.
LECT 3 hrs.
A survey of American Roots music from the 19th century to the present. Early Anglo and African influences are presented followed by 20th century folk, gospel, Hispanic, various styles of country, bluegrass and related acoustic music, various styles of blues and jazz, Cajun and zydeco, early R&B, soul and the beginnings of rock and roll.
MUS-117. Music Theory I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis. **Prerequisites:** MUS-011 or permission of department chair **Corequisites:** MUS-125, MUS-109, MUS-135.

MUS-118. Music Theory II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. This course is designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis. **Prerequisites:** MUS-117 **Corequisites:** MUS-126, MUS-110, MUS-136.

MUS-124. Electronic Music II. 3 Credits.
LECT 3 hrs.
This course is a continuation of Introduction to Electronic Music with increased application of sound systems and MIDI systems. Students produce recorded final projects. **Prerequisites:** MUS-112 **Additional Fees:** Course fee applies.

MUS-125. Applied Music Secondary-Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano. **Corequisites:** MUS-117, MUS-135.

MUS-126. Applied Music Secondary-Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is a four-semester sequence designed to develop keyboard facility and is required of all music emphasis students whose principal instrument is not piano. **Prerequisites:** MUS-125 **Corequisites:** MUS-118, MUS-136.

MUS-127. Principles of Strings I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to convey an understanding of the basic technical skills on violin studies with the first position. **Prerequisites:** MUS-127.

MUS-128. Principles of Strings II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. This course is designed to complete the study of basic violin, viola techniques and the understanding of the proper pedagogical approaches. **Prerequisites:** MUS-127.

MUS-129. Music in Early Childhood. 3 Credits.
LECT 3 hrs., LAB 2 hrs.
A course offering students a wide variety of meaningful experiences which provide a foundation for musical growth and understanding of early childhood music. This is a hands-on course in which students must participate. **Prerequisites:** MUS-127.

MUS-133. Development of Musical Theater. 3 Credits.
LECT 3 hrs.
This course is an examination of the elements of the musical (singing, acting, dancing, song construction, story development) and an exploration of the beginnings of the musical theater from Europe to Broadway. 

MUS-135. Applied Music Primary I. 1 Credit.
LAB 1 hr.
For Music emphasis students only. This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis. **Prerequisites:** MUS-135 **Corequisites:** MUS-126, MUS-110, MUS-118 **Additional Fees:** Course fee applies.

MUS-136. Applied Music Primary II. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis. **Prerequisites:** MUS-136 **Corequisites:** MUS-225, MUS-209, MUS-215 **Additional Fees:** Course fee applies.

MUS-137. Applied Music Primary III. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis. **Prerequisites:** MUS-137 **Corequisites:** MUS-226, MUS-210, MUS-216 **Additional Fees:** Course fee applies.

MUS-138. Applied Music Primary IV. 1 Credit.
LAB 1 hr.
This course consists of one 50-minute private lesson per week (to be arranged) on student's primary instrument (or in voice). Students are expected to attend performance seminars and participate in public recitals. These courses are classical in emphasis. **Prerequisites:** MUS-138 **Corequisites:** MUS-226, MUS-210, MUS-216 **Additional Fees:** Course fee applies.

MUS-139. Wind Ensemble I. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required. **Prerequisites:** MUS-139.

MUS-140. Wind Ensemble II. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required. **Prerequisites:** MUS-140.

MUS-141. Wind Ensemble III. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required. **Prerequisites:** MUS-141.

MUS-142. Wind Ensemble IV. 1 Credit.
LAB 4 hrs.
Includes group performance on all instruments with standard and new repertoire. Emphasis is on reading and musicianship. Prior knowledge of instrument is required.
MUS-143. World Music and Culture. 3 Credits.
LECT 3 hrs.
A survey of world folk music including material from Asia, the Middle East, Africa, Europe, North and South America. Lectures and discussions are illustrated by recordings, DVDs and online resources. Students may be invited to contribute course subject matter by bringing personally favored music to be studied.

MUS-145. Chamber Choir I. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-146. Chamber Choir II. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-147. Chamber Choir III. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-148. Chamber Choir IV. 1 Credit.
LAB 4 hrs.
Required of all students in Curriculum 1190 and 2006. Includes performance of selected sacred and secular vocal chamber music. Students must have advanced vocal and technical ability. Participation in concerts and other scheduled appearances is required. Memorization is required.

MUS-150. Jazz History and Styles. 3 Credits.
LECT 3 hrs.
This course is an examination of the styles and elements of this improvisational music from the 1860's to the present. This course focuses on the evolution of jazz from its roots in the blues and spirituals to the emergence of contemporary fusion and avant-garde styles.

MUS-152. Piano I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-153. Piano II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios, and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-154. Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-155. Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For non-music majors. Group lessons in the fundamentals of piano playing. This course includes the study of scales, arpeggios and simple accompaniments. Keyboard experience is not required. Course is designed specifically for the non-music major.

MUS-159. Guitar I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course is designed to accommodate non-guitar music students as well as non-music majors.

MUS-160. Guitar II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course is designed to accommodate non-guitar music students as well as non-music majors.

MUS-161. Guitar III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course is designed to accommodate non-guitar music students as well as non-music majors.

MUS-162. Guitar IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
Open to all students. Group guitar instruction in fundamental guitar techniques. Studies include plectrum and finger style, position reading, scales and chord construction. Course is designed to accommodate non-guitar music students as well as non-music majors.

MUS-163. Rock History and Culture. 3 Credits.
LECT 3 hrs.
This course traces the evolution of rock music from 1955 to the present and examines the cultural impact of the music form on contemporary society.

MUS-165. Introduction to Music Recording. 3 Credits.
LECT 3 hrs.
An introduction to the commercial recording studio. Students explore the equipment and techniques used in the recording of various types of contemporary music. Topics include studio acoustics and design, sound and hearing, microphones and microphone technique, recording console and signal flow, analog and digital recording systems, and signal processing. Students receive hands-on experience on both analog and digital recording equipment during in-class demonstrations and workshops. Additional Fees: Course fee applies.
MUS-166. Introduction to Music Business. 3 Credits.
LECT 3 hrs.
A general overview of all areas of music business including demo tape promotion, contracts, managers, copyright laws and publishing. Guest lecturers include prominent industry lawyers and agents.

MUS-167. Music Recording II. 3 Credits.
LECT 3 hrs.
A continuation of MUS-165 Introduction to Music Recording in which students explore more complex recording situations through individual student projects. Students receive hands-on experience in session set-up, miking, use of outboard signal processing, mixing and production.
Prerequisites: MUS-165
Corequisites: MUS-180
Additional Fees: Course fee applies.

MUS-170. Symphony Orchestra I. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-171. Symphony Orchestra II. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-172. Symphony Orchestra III. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-173. Symphony Orchestra IV. 1 Credit.
LAB 4 hrs.
Includes performance of the classical symphonic repertoire for full orchestra. Rehearsals are held one evening a week. Prior knowledge of instrument is required.

MUS-174. Aural Comprehension I. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-175. Aural Comprehension II. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-176. Aural Comprehension III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-177. Aural Comprehension IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-178. Aural Comprehension III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-179. Aural Comprehension IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
An intensive aural experience designed to develop ear training skills through classroom activities and computer-based work stations.
Additional Fees: Course fee applies.

MUS-180. Microphone Techniques. 2 Credits.
LECT 1 hr., LAB 2 hrs.
An in-depth study of the different techniques used for miking an array of instruments from woodwinds, brass and strings, to drums and electric instruments. Students study the design of dynamic and condenser microphones, special microphones used for certain instruments, sound comparison between different types of microphones and microphone placement on instruments.
Prerequisites: MUS-165
Corequisites: MUS-170
Additional Fees: Course fee applies.

MUS-182. Audio Production Techniques. 1 Credit.
LECT 4 hrs.
An examination of the production techniques used in the recording of contemporary and classic music. The course focuses on the development of critical listening skills, as well as the use of different recording and mixing techniques in an effort to enhance the overall production value of a recording. Students produce a sound-alike project in which they must emulate the sound of a preexisting recording.
Prerequisites: MUS-165, MUS-167, MUS-180
Additional Fees: Course fee applies.

MUS-184. Musical Theatre Production and Performance. 3 Credits.
LECT 2 hrs., LAB 2 hrs.
Musical Theatre Production and Performance offers demanding training designed to prepare students for a career in musical theatre. Students participate in all aspects of the production from technical elements to a final performance.

MUS-201. Jazz Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-202. Jazz Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-203. Jazz Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-204. Jazz Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for experienced instrumentalists to study and perform standard and current jazz literature. Prior knowledge of instrument is required.

MUS-209. Applied Music Secondary-Voice III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence planned to develop vocal ability. The course emphasizes vocal techniques, diction and sight-reading.
Prerequisites: MUS-110.
LECT 1 hr., LAB 2 hrs.
Music students only. A four-semester sequence planned to develop vocal ability. This course emphasizes vocal techniques, dictation and sight-reading.
Prerequisites: MUS-209 or permission of department chair.

MUS-214. Form and Analysis. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A study of larger forms which have evolved throughout music history. Emphasis is placed on score reading of symphonies, large choral works, operas, chamber works and sonata repertoire.
Prerequisites: MUS-117, MUS-118, MUS-215, MUS-216.

MUS-215. Music Theory III. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-119
Corequisites: MUS-225, MUS-209, MUS-137.

MUS-216. Music Theory IV. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
For Music Students only. Designed to stress the fundamentals of musicianship including the basic elements of sight-singing, ear-training, writing, playing, terminology and form analysis.
Prerequisites: MUS-215

MUS-217. Music History and Literature to 1750. 3 Credits.
LECT 3 hrs.
An in-depth study of music in Western civilization from ancient times through the Baroque period. Music from each period is discussed and analyzed.

MUS-218. Music History and Literature From 1750. 3 Credits.
LECT 3 hrs.
A continuation of Music History and Literature from 1750. A study of music from the late Baroque through the Romantic period. Includes analysis of representative works.

MUS-220. Music Business II. 3 Credits.
LECT 3 hrs.
This course expands upon the concepts learned in MUS-166 Introduction to Music Business and delves deeper into the areas of marketing and promotion, CD packaging, creation of a business entity and website design for the purpose of self-promotion.
Prerequisites: MUS-166.

MUS-221. Chamber Ensemble I. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-222. Chamber Ensemble II. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-223. Chamber Ensemble III. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-224. Chamber Ensemble IV. 1 Credit.
LAB 4 hrs.
Designed to provide an opportunity for players of wind, string, percussion and keyboard instruments to study, rehearse and perform selected works from chamber music literature (consisting of two to 10 players per ensemble). Sessions must be arranged. Students must play a wind, percussion, string or keyboard instrument.

MUS-225. Applied Music Secondary-Piano III. 1 Credit.
LECT 1 hr., LAB 2 hrs.
A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-126

MUS-226. Applied Music Secondary - Piano IV. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For Music Students only. A four-semester sequence designed to develop keyboard facility. Required of all music emphasis students whose principal instrument is not piano.
Prerequisites: MUS-225

MUS-227. Operetta and Music Theatre I. 1 Credit.
LAB 4 hrs.
a theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-228. Operetta and Musical Theatre II. 1 Credit.
LAB 4 hrs.
a theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-229. Operetta and Musical Theatre III. 1 Credit.
LAB 4 hrs.
a theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.
MUS-230. Operetta and Musical Theatre IV. 1 Credit.
LAB 4 hrs.
A theatrical production is the final objective in the course. Students, through rehearsal and performance, have a chance to have practical experiences with their art, i.e., staging, conducting, lighting, singing and general production work.

MUS-233. Independent Study in Music. 1 Credit.
LECT 1 hr.
For Music Students only. This course is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the student and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-234. Independent Study in Music. 3 Credits.
LECT 3 hrs.
For Music Students only. Independent Study in Music is designed to allow students who have a specialized interest or who are pursuing a topic at an advanced level to engage in rigorous individualized study. The study must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-237. Cabaret Music Theatre. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-238. Cabaret Music Theatre II. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-239. Cabaret Music Theatre III. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-240. Jazz Guitar. 1 Credit.
LECT 1 hr., LAB 2 hrs.
This course is recommended for guitar majors, jazz ensemble guitarists or those with equivalent skills. It covers harmonic and melodic aspects of jazz improvisation in a solo or ensemble setting. Topics include modes, arpeggios and chord structure, and inversions of seventh chords in all keys. Students must already have a working knowledge of the guitar, i.e., bar chords, major/ minor scales, some experience with notes and chord symbols. While this is not a class for beginner guitarists, beginner jazz players are welcome.

MUS-241. Guitar Ensemble. 1 Credit.
LECT 1 hr., LAB 2 hrs.
For guitar majors or those with equivalent skills (by permission of instructor or music instructor). Guitar technique and fingerboard mastery are discussed. Sight-reading is developed in class and individual projects assigned. Students explore the guitar chamber repertoire which includes duets, trios and quartets as well as other combinations (i.e., guitar with flute, violin or voice).

MUS-242. Cabaret Music Theatre IV. 1 Credit.
LAB 4 hrs.
This course in cabaret theatre considers the revue-type of theatrical production which has been popularized in productions in New York, Chicago, Los Angeles and on many college campuses throughout the country. A cabaret musical revue is the final project.

MUS-243. Musical Theatre Auditions. 3 Credits.
LECT 3 hrs.
This course introduces the students to the preliminary work involved in the techniques of auditioning. The protocol of auditioning, including resume, agents, casting directors, scene reading and actual vocal selections, are covered in class.

MUS-244. Independent Study in Electronic Music I. 1 Credit.
LECT 1 hr.
This course is an exploration of analog synthesis techniques and devices designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.
Prerequisites: MUS-112, MUS-124
Additional Fees: Course fee applies.

MUS-245. Independent Study in Electronic Music II. 1 Credit.
LECT 1 hr.
This course is an exploration of the computer-based music workstation and digital technology designed to allow the student to pursue specialized topics to an advanced level. The study is project oriented.
Prerequisites: MUS-112, MUS-124, MUS-244
Additional Fees: Course fee applies.

MUS-248. Enjoyment of Music. 3 Credits.
LECT 3 hrs.
Emphasis is placed on experiencing, discussing and realizing various musical styles throughout history to the present time. All music from the ancient to even today’s most popular styles are covered, but with specific attention given to how to listen and appreciate each musical genre. Students may even be invited to contribute to the course content by bringing personally favored music to be studied.

MUS-249. Practicum. 1 Credit.
LECT 1 hr.
For Music Students only. Weekly lessons in a one-to-one or small group arrangement with a faculty member prepares the student in the techniques of professional music recording. Appropriate projects are assigned to help the individual student develop his or her recording skills in various situations and with various types of equipment. A finished project is produced by the student and judged in a jury session.
Prerequisites: MUS-165, MUS-167, MUS-180, MUS-182, MUS-259
Additional Fees: Course fee applies.
MUS-250. Internship in Music Recording. 1 Credit.
LECT 1 hr.
For Music students only. This course assigns the student to experience the actual working conditions in an established music recording studio facility. With the cooperation of the facility director, appropriate work projects are assigned and the student judged on his or her level of knowledge, expertise and confidence in the various aspects of the music recording business.
Prerequisites: MUS-165, MUS-167, MUS-180, MUS-182, MUS-259
Additional Fees: Course fee applies.

MUS-253. Independent Study in Music II. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-254. Independent Study in Music III. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-255. Independent Study in Music IV. 1 Credit.
LECT 1 hr.
Independent Study in Music is designed to allow the student who has a specialized interest or who is pursuing a topic at an advanced level to engage in rigorous individualized study. The study plan must be designed by the student and a faculty member and must be approved by the department chair.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

MUS-258. Contemporary Music: 20th-21st Century. 3 Credits.
LECT 3 hrs.
A study of musical trends, idioms, styles and asectics of the Classical Music, Jazz, Rock, Latin Music, and Film Music of the 20th and 21st centuries. In addition to the study of the literature, students will be broadly educated on the fundamental elements of music including melody, harmony, counterpoint, musical forms, texture, and orchestration. Students may be invited to contribute subject matter by bringing personally favored music of the 20th and 21st Centuries to be studied, analyzed and discussed.

MUS-259. Hard Disc Recording. 2 Credits.
LECT 1 hr., LAB 3 hrs.
Students learn about the operation and application of AVID Pro Tools hard disk recording and editing software. Topics include signal flow and routing, editing, fades and cross fades, digital signal processing, mixing, and automation.
Prerequisites: MUS-165, MUS-167 and MUS-180 or MUS-165, MUS-112 and MUS-124
Additional Fees: Course fee applies.

MUS-291. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.
MUS-292. Special Topics in Music. 3 Credits.
LECT 3 hrs.
A broad-based review of musical topics ranging from a continuation of sight singing, ear training and keyboard harmony to technology-based courses such as Live Sound, and Music for Film.
Prerequisites: Permission of department chair.

Nursing (NUR)

Courses

NUR-012. Nursing Transition: Advanced Placement Status. 1 Credit.
LECT 1 hr.
This is a mandatory course required of all students granted advanced placement into NUR-123 Basic Medical/Surgical Nursing. Emphasis is placed on the conceptual framework of the County College of Morris Nursing program, use of the nursing process, communication skills, ethical and legal issues, and the role of the registered nurse. This course is the last component of the advanced placement process and is designed to facilitate a smooth transition for the student.
Prerequisites: Permission of department chair
Corequisites: NUR-105, NUR-123.

NUR-105. Foundations of Nursing. 1 Credit.
LECT 1 hr.
This course provides the foundational concepts on which nursing education and practice are built. Students apply basic knowledge of these concepts as they begin to learn the practice of nursing. Historical, sociocultural, ethical and legal tenets are studied. Students gain an appreciation for the profession of nursing as well as awareness of the responsibility and accountability expected. This course is offered as a traditional face-to-face, hybrid online or online course.
Prerequisites: Permission of department chair
Corequisites: NUR-105, NUR-106.

NUR-123. Basic Medical/Surgical Nursing. 4 Credits.
LECT 1 hr.
This course is offered as a traditional face-to-face, hybrid online or online course. It is a mandatory course required of all students granted advanced placement into NUR-123 Basic Medical/Surgical Nursing. Emphasis is placed on conceptual framework of the County College of Morris Nursing program, use of the nursing process, communication skills, ethical and legal issues, and the role of the registered nurse. This course is the last component of the advanced placement process and is designed to facilitate a smooth transition for the student.
Prerequisites: Permission of department chair
Corequisites: NUR-123, NUR-124.

NUR-125. Medical Terminology. 4 Credits.
LECT 2 hrs.
This course is an online course with online assignments and quizzes. The course is open to any student interested in learning the basic construction of medical words. Students acquire a solid foundation to aid in retention of medical vocabulary and facilitate understanding of new terms. Prefixes, suffixes and root words are introduced in a logical manner. A brief outline of the anatomy and physiology of each body system is presented, followed by the related pathophysiology. Included are terms describing diseases, disorders and related surgical, diagnostic and treatment terms. Students become proficient in word building and recognition of medical terms as they relate to anatomy and physiology. Students become familiar with terminology relevant to pharmacology as well as psychiatry. Non-Nursing Majors may take this course.
NUR-121. Fundamentals of Nursing. 6 Credits.
LECT 3 hrs., LAB 3 hrs., CLIN 6 hrs.
This course serves as the foundation for all subsequent nursing courses. The nursing process is introduced with concentration on the assessment of man’s basic health needs, which are identified as psychosocial, elimination, rest and activity, safety, environment, oxygen and nutrition. The development and use of fundamental nursing skills and interventions are included. Concepts of clinical decision-making skills are introduced. Learning experiences are planned, using the classroom, campus laboratory and community clinical facilities.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007 and MAT-011, MAT-014 or MAT-050 and MAT-016 and admission to Professional Phase of Nursing program
Corequisites: BIO-101, NUR-105
Additional Fees: Course fee applies.

NUR-123. Basic Medical/Surgical Nursing. 10 Credits.
LECT 6 hrs., CLIN 12 hrs.
This course focuses on the study of adults with a variety of commonly occurring medical-surgical problems that interfere with the ability to meet basic health needs. Students utilize the nursing process to prioritize and provide appropriate nursing interventions for patients with higher acuity. Students use assessment skills to develop appropriate nursing diagnoses, outcomes and plans of care. Related theory, therapeutic communications skills and nursing care skills are employed in the provision of patient care in clinical facilities. Clinical decision-making skills are further developed.
Prerequisites: BIO-101, NUR-105, NUR-121
Corequisites: BIO-102, CHM-117
Additional Fees: Course fee applies.

NUR-214. Pharmacology for the Health Professional. 3 Credits.
LECT 3 hrs.
This online course provides an overview of pharmacology with an emphasis on clinical application. The course is organized by drug classifications and emphasizes current usage, dosage recommendations, interactions, and implications for illness prevention and management. This course is useful for any professional who administers medications or who works with clients for whom medications are a treatment modality. Non-Nursing majors may take this course.

NUR-220. Pharmacology for the Health Professional. 3 Credits.
LECT 3 hrs.
This course focuses on the study of adults with a variety of commonly occurring medical-surgical problems that interfere with the ability to meet basic health needs. Students utilize the nursing process to prioritize and provide appropriate nursing interventions for patients with higher acuity. Students use assessment skills to develop appropriate nursing diagnoses, outcomes and plans of care. Related theory, therapeutic communications skills and nursing care skills are employed in the provision of patient care in clinical facilities. Clinical decision-making skills are further developed.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022

NUR-224. Nursing Colloquium. 1 Credit.
LECT 1 hr.
This course involves an examination of selected topics and issues that students in the final semester of the professional phase of the Nursing Program will experience as they transition from the role of student nurse to graduate nurse. Topics concerning professional development and preparation for the workplace are addressed. Ethical, legal and professional issues that impact the practice of the graduate nurse are examined.
Prerequisites: NUR-213
Corequisites: NUR-214.

Philosophy (PHL)

Courses

PHL-111. Introduction to Philosophy. 3 Credits.
LECT 3 hrs.
An introduction to major themes of Western and Asian philosophical thought designed to give the student a grasp of the fundamental option which reflective persons face between opposing views of the world. The way in which this option was formed is traced, and the manner is shown in which this choice influences one’s thinking about topics such as the nature of the self, truth, religion, morality and government.
Prerequisites: Placement basis or ENG-025 or ENG-007 or ENG-022.

PHL-114. Ethics. 3 Credits.
LECT 3 hrs.
A survey of the most influential efforts of philosophers from diverse traditions to bring reason into the process of making appropriate and adequate choices in matters basic to the flourishing of human beings. Contemporary problems analyzed include end-of-life, reproductive, genetic engineering, punishment, business and environmental issues.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

PHL-115. Logic. 3 Credits.
LECT 3 hrs.
Logic is the study of reasoning, good and bad. Good reasoning moves from credible statements to others that are well supported by them. Bad reasoning obscures this process. This course examines features that make reasoning good or bad, develops critical skills in recognizing formal and informal patterns of reasoning, and deepens one’s talent in constructing arguments that exemplify good reasoning.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025.
PHL-180. Introduction to Philosophy-Honor. 3 Credits.
LECT 3 hrs.
This seminar follows, conceptually and historically, dominant lines of philosophical thinking on themes widely taken to be fundamental in Western and Asian culture. The course also compares and contrasts classical with contemporary perspectives.
Prerequisites: Permission of department chair or honors advisor.

PHL-211. Philosophy of the Person. 3 Credits.
LECT 3 hrs.
A lecture-discussion course of classical readings from religious and humanist authors centering on related notions of human nature, person, self, self-actualization and freedom. An effort is made to assess some social policies by reference to an adequate notion of the person.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

PHL-212. Philosophy and Religion. 3 Credits.
LECT 3 hrs.
This course surveys the development and interaction of world religions, such as Judaism, Christianity, Islam, African religions, Hinduism, Buddhism, Confucianism, Taoism and Shintoism. It examines major figures, stories, rituals and beliefs of the religions, and shows how they shape the lives of believers. Finally, it analyzes philosophical concepts such as God and gods, faith and reason, immortality, good and evil, karma, love, meditation, mysticism and nirvana.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

PHL-221. Philosophy of Plato. 3 Credits.
LECT 3 hrs.
Concentrated readings and in-depth discussion of several of the great dialogues of Plato, chosen from the following: Meno, Republic, Laws, Phaedo, Symposium, Phaedrus, Apology and Crito.
Prerequisites: Placement basis or ENG-025 or ENG-022 or ENG-007.

PHL-280. Ancient Philosophy-Honors. 3 Credits.
LECT 3 hrs.
This seminar critically examines the central ideas of Plato and Aristotle on knowledge, mind, body, freedom, nature, ethics, politics and religion. The course also contrasts their ideas with those of other ancient philosophers, such as Pythagoras, Heraclitus, Parmenides, Zeno, Epicurus, Epictetus, Cicero and Aurelius. Students develop the ability to formulate their own views on philosophic issues.
Prerequisites: Permission of department chair or honors advisor.

PHL-291. Special Topics in Philosophy. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in philosophy. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A 100 Level Philosophy course or permission of department chair.

PHL-292. Special Topics in Philosophy. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in philosophy. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: A philosophy 100-level course or permission of department chair.

Photography (PHO)

Courses

PHO-110. Photography Appreciation. 3 Credits.
LECT 3 hrs.
Through lectures, discussions, written analysis, projects and presentations, the student will gain an understanding and appreciation of the global and cultural impact of photography. Students focus on the formal development of photography and the role it plays in social and cultural production, gaining insight into how photographs produce visual representations across cultures and reflect social values. Students learn the fundamental visual elements of photographic form, critical skills necessary to interpret a variety of visual representations and enhancing visual literacy. Note: This is a lecture based course, not a studio art course and is not acceptable for majors of Photography, Graphic Design, or Visual Arts.

PHO-111. Introduction to Photography. 3 Credits.
LECT 3 hrs.
Through lectures, discussions, written analysis, projects and presentations, students gain an understanding and appreciation of the global and cultural impact of photography. Students focus on the formal development of photography and the role it plays in social and cultural production, gaining insight into how photographs produce visual representations across cultures and reflect social values. Students learn the fundamental visual elements of photographic form, critical skills necessary to interpret a variety of visual representations and enhancing visual literacy. This is a lecture based course, not a studio art course and is not acceptable for majors of Photography, Graphic Design, or Visual Arts.

PHO-112. Equipment, Materials and Processes. 3 Credits.
LECT 3 hrs.
A non-studio technology course covering digital photographic processes. The range of topics for this course include data asset management, professional workflow, color management and basic scientific principles regarding optics, the physics of light, camera design and reproduction problems. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115 and MAT-011.

PHO-113. History of Photography. 3 Credits.
LECT 3 hrs.
A survey of photographic history from its origin to the present day. Topics include the invention of photography, the photograph as document, the photograph as art, the natural landscape, the portrait, color photography and contemporary photography. Course requirements may include extensive use of Blackboard and other online components.
Prerequisites: ENG-025 or ENG-022 or ENG-007.
PHO-115. Photography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A beginning photography studio course emphasizing the
fundamentals of photographic language, digital camera systems and
creative visual problem solving. Students become familiar with the
concept of the digital darkroom using image editing photographic
production tools. Course requirements may include extensive use of
Blackboard and other online components, including, but not limited
to, photo sharing sites. The current software program used in this
course is Adobe Lightroom, which is subject to change based on
technology advancement and availability. Note: Each semester
there will be a section of PHO-115 designated for Photography
Technology majors which will require that students own or have
unrestricted access to a DSLR (35mm digital camera). No point and
shoot cameras are allowed in this course section.
Additional Fees: Course fee applies.
Prerequisites: PHO-115

PHO-116. Photography II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An intermediate black and white photography course introducing
the student to medium and large format camera systems in
both commercial and fine art applications. Darkroom and digital
advancements are covered in this course.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-117. Color Photography I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introduction to color photographic materials. Topics include
color perception, composition/design and color technology. Color
theory, conventional image processing and digital image processing
are covered. Course requirements may include extensive use of
Blackboard and other online components including, but not limited
to, photo sharing sites.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-118. Color Photography II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An advanced studio course in color photographic theory. Course
requirements may include extensive use of Blackboard and other
online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-117
Additional Fees: Course fee applies.

PHO-119. Contemporary Photography. 3 Credits.
LECT 3 hrs.
An in-depth look at photography and photographers practicing since
1950. Students gain an understanding of the philosophies that
have shaped the current uses of the photographic image. Course
requirements may include extensive use of Blackboard and other
online components including, but not limited to, photo sharing sites.

PHO-204. Digital Imaging I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introductory studio course providing an overview of various
digital post production software applications used for digital
photography. Non-destructive vs. destructive image manipulation,
color management, workflow and image compositing basics are
several of the topics covered in this course. Current software
applications employed in the course include Adobe Photoshop and
Adobe Lightroom. Course requirements may include extensive use
of Blackboard and other online components including, but not limited
to, photo sharing sites.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-213. Documentary Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introduction to the methods, history, problems and opportunities
of in-depth, fact-based photographic assignments and essays.
Students learn how to plan, engage and complete in-depth
documentary and journalistic photographic projects. Course
requirements may include extensive use of Blackboard and other
online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-215. Large Format Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Note: Students will be required to purchase an appropriate light
meter. The operation and basic technical mastery of the professional
large format camera with an introduction to studio lighting. Course
requirements may include extensive use of Blackboard and other
online components including, but not limited to, sites such as Flickr.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-216. Studio Lighting I. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An introductory studio course covering the basic concepts and
manipulation of artificial lighting for a range of subject matter,
camera formats and applications. The course focuses on developing
problem-solving skills that address technical and creative methods
of crafting an image to achieve a desired goal. Course requirements
may include extensive use of Blackboard and other online
components including, but not limited to, photo sharing sites.
Prerequisites: PHO-115 and PHO-204
Additional Fees: Course fee applies.

PHO-224. Digital Imaging II. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This studio course is designed for experienced digital imaging
users. Focusing on a semester long project, students learn
how different media influence the way we see and capture the
world. As technology and the role of the photographer evolve,
methods of manipulation and presentation are explored. Course
requirements may include extensive use of Blackboard and other
online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-204
Additional Fees: Course fee applies.
PHO-226. Portfolio Preparation. 3 Credits.
LECT 3 hrs.
Students prepare a final portfolio, in both print and digital formats, showcasing examples of photographic skills acquired during their course of study in the Photography Technology program. Students focus on presentation, craftsmanship and the development of a personal style. Various outlets and methods of presentation are explored. Formal and informal critiques help students define strengths and career goals. This course should be taken in the student's final semester. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-216
Corequisites: PHO-227
Additional Fees: Course fee applies.

PHO-227. Professional Studio Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
An advanced studio course focusing on the development of concepts and ideas within a studio environment through a variety of assignments. Emphasis is placed on developing light design strategies for various applications ranging from portraiture to architecture. Technical competency and professionalism are key components of this course. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.
Prerequisites: PHO-204 and PHO-216
Additional Fees: Course fee applies.

PHO-228. Cooperative Work Experience-Photography. 3 Credits.
COOP 3 hrs.
Open to Photography Technology (3550) majors only. Students work in photography-related jobs, receiving training. Photography Technology faculty members individually supervise students.
Prerequisites: PHO-116
Corequisites: PHO-229.

PHO-229. Cooperative Work Experience- Photography Related Class. 1 Credit.
LECT 1 hr.
Open to Photography Technology (Program 3550) majors only. Related class designed to supplement Cooperative Work Experience. Weekly meetings include discussion, written assignments and critical analysis of the work experience.
Prerequisites: PHO-116
Corequisites: PHO-228.

PHO-290. Independent Study I in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives and submitting a summary project.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

PHO-291. Special Topics in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Topics in photography which are not included in the regularly scheduled curriculum. May include studio work, technical topics and/or critique.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-292. Special Topics in Photography. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Studio work in selected topics or issues in photography.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

PHO-293. Special Topics in Photography. 1 Credit.
LECT 3 hrs.
Studio work in selected topics or issues in photography.
Prerequisites: PHO-115
Additional Fees: Course fee applies.

Physics (PHY)

Courses

PHY-103. Concepts of Physics. 4 Credits.
LECT 3 hrs., LAB 2 hrs.
This is a one-semester examination of the basic concepts of kinematics and dynamics, conservation of energy, heat and selected topics in electricity, magnetism and modern physics.
Prerequisites: MAT-007 or passing score on algebra section of Basic Skills Placement test
Additional Fees: Course fee applies.

PHY-111. Technical Physics I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This is the first course of a two-semester applied physics course covering particle kinematics, Newton's laws, oscillatory motion, conservation of energy, heat and the gas laws.
Prerequisites: ENR-119, ENR-124 and MAT-110
Additional Fees: Course fee applies.

PHY-112. Technical Physics II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This is the second course of a two-semester applied physics course covering the essentials of electricity and magnetism, and selected topics from fluid mechanics, wave theory and optics.
Prerequisites: PHY-111
Additional Fees: Course fee applies.

PHY-118. Meteorology. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is an introduction to meteorology. Topics include observing the weather, clouds and precipitation, winds and the circulation of the atmosphere, air masses and fronts, cyclones and anticyclones, historic weather events, hurricanes, thunderstorms and tornadoes, atmospheric stability, weather maps and weather forecasting, radar and Doppler radar, air pollution, climate and seasons. Laboratory work includes the analysis and understanding of weather maps, the measurement of meteorological variables as well as Internet activities.
Prerequisites: MAT-016 or equivalent
Additional Fees: Course fee applies.

PHY-125. General Physics I - Lecture. 3 Credits.
LECT 3 hrs.
This is the first course of a two-semester sequence in general physics. Topics include kinematics and dynamics of translational and rotational motion, conservation of energy, conservation of momentum, fluid statics and dynamics, and heat.
Prerequisites: MAT-123
Corequisites: PHY-126.
PHY-126. General Physics I Laboratory. 1 Credit.
LAB 3 hrs.
This is the first course of a two-semester sequence in laboratory physics for students who are enrolled concurrently in General Physics I (PHY-125). Laboratory experiments demonstrate concepts covered in the accompanying lecture course, while introducing techniques of observation, data recording, data analysis and formal communication of experimental results.
Corequisites: PHY-125
Additional Fees: Course fee applies.

PHY-127. General Physics II - Lecture. 3 Credits.
LECT 3 hrs.
This is the second course of a two-semester sequence in general physics. Topics include vibratory and wave motion, electricity, magnetism, optics and essentials of modern physics.
Prerequisites: PHY-125 and PHY-126
Corequisites: PHY-128.

PHY-128. General Physics II Laboratory. 1 Credit.
LAB 3 hrs.
This is the second course of a two-semester sequence in laboratory physics for students who are enrolled concurrently in General Physics II (PHY-127). Experiments demonstrate concepts covered in the accompanying lecture course, while continuing to develop laboratory skills introduced in PHY-126.
Prerequisites: PHY-126 and PHY-125
Corequisites: PHY-127
Additional Fees: Course fee applies.

PHY-130. Engineering Physics I. 4 Credits.
LECT 4 hrs.
This is the first course of a three-semester, calculus-based physics sequence. Topics include particle kinematics in one and in two dimensions, work and energy, impulse and momentum, rotational motion, kinematics and dynamics of rigid bodies and elements of thermodynamics.
Prerequisites: MAT-131
Corequisites: MAT-132.

PHY-133. Engineering Physics II. 4 Credits.
LECT 4 hrs.
This is the second course of a three-semester, calculus-based physics sequence. Topics include simple harmonic motion, waves, electromagnetic theory and applications, Maxwell's equations in integral form.
Prerequisites: PHY-130 and MAT-132
Corequisites: PHY-230, PHY-134.

PHY-134. Laboratory for Engineering Physics II. 1 Credit.
LAB 3 hrs.
This is the first course of a two-semester laboratory sequence designed for students who are enrolled concurrently in the Engineering Physics lecture sequence. The course emphasizes fundamental physics principles through experimentation, principles of experiment design, instrumentation, techniques of observation, data recording, data analysis and formal communication of experimental results. Experiments study selected mechanical, electrical and magnetic phenomena.
Prerequisites: PHY-130
Corequisites: PHY-133
Additional Fees: Course fee applies.

PHY-232. Engineering Physics III. 3 Credits.
LECT 3 hrs.
This is the final course of a three-semester, calculus-based physics sequence. Topics include geometric optics, Maxwell's equations in differential form, electromagnetic radiation and fundamentals of physical optics, the development of the Schrödinger Equation approach to quantum mechanics and selected applications of quantum theory to the understanding of atomic and nuclear structure.
Prerequisites: PHY-133 and MAT-230
Corequisites: PHY-233.

PHY-233. Laboratory for Engineering Physics III. 1 Credit.
LAB 3 hrs.
This course is a continuation of the Engineering Physics laboratory sequence. The course continues to develop professional laboratory technique through experiments on selected topics in geometric optics, physical optics and modern physics.
Prerequisites: PHY-134
Corequisites: PHY-232
Additional Fees: Course fee applies.

Political Science (POL)

Courses

POL-111. American Government. 3 Credits.
LECT 3 hrs.
A study of the myths and realities of the American political system. The course focuses on the constitutional development of the American system of government, the political, policymaking and implementing structures of American government, and the problem of representative government in the United States. Consideration is given to contemporary domestic and foreign policy issues.

POL-222. Constitutional Law. 3 Credits.
LECT 3 hrs.
This is a survey course which examines the constitutional development of the U.S., the growth of American constitutional doctrine and law, and the judicial process within which judicial decisions are formulated and given the force of law. The constitutional basis for the government's powers and the liberties of the individual are examined within this framework. Emphasis is given to landmark U.S. Supreme Court decisions.
Prerequisites: POL-111.

POL-231. State and Local Government. 3 Credits.
LECT 3 hrs.
A survey of the organizational structure and policies of local, county and state governments, with special emphasis on New Jersey. Students become acquainted with many of the major issues facing metropolitan, urban and suburban governing bodies.

POL-240. International Politics. 3 Credits.
LECT 3 hrs.
An introduction to the nature and problems of international politics. Analysis and consideration is given to the development and contemporary status of nation-states, their relationships and the elements of power politics. Emphasis is given to problems of war and peace, the nature of conflict and the various approaches to world peace.
POL-245. Comparative Government. 3 Credits.
LECT 3 hrs.
An examination of the variety of governmental systems, both western and non-western, whose importance is reflected in the increasing interdependent nature of the world community. The political systems of the traditional European powers (Great Britain, Germany and Russia) and strategically important non-western nation-states (Japan, China, India and Mexico) are reviewed. Trends in government in the developing countries are studied as well.

POL-270. Civil Liberties-Basic Rights and Freedom. 3 Credits.
LECT 3 hrs.
An analysis and examination of individual rights within a democratic society. Focus is on such major issues as freedom of expression and religion, political and racial equality, criminal justice, the Bill of Rights and its applicability to the states. The role of the judiciary, particularly the U.S. Supreme Court, is analyzed.

POL-291. Special Topics in Political Science. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in political science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Political Science.

POL-292. Special Topics in Political Science. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in political science. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Political Science.

Portuguese (PTG)

Courses

PTG-111. Elementary Portuguese I. 3 Credits.
LECT 3 hrs.
Not for native speakers. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary, basic cultural knowledge and the essentials of grammar including present tense verbs. Both Brazilian and European Portuguese modalities are introduced.

PTG-112. Elementary Portuguese II. 3 Credits.
LECT 3 hrs.
This course is intended for students with one semester of elementary college-level Portuguese or with limited background in the language. Emphasis is given to fundamentals of conversation, reading and writing. The course includes practice in pronunciation, basic vocabulary, basic cultural knowledge and the essentials of grammar. Past tenses are studied to express both completed and ongoing past events.
Prerequisites: PTG-111 or permission of department chair.

PTG-211. Intermediate Portuguese I. 3 Credits.
LECT 3 hrs.
This course is a continuation of Portuguese grammar at the intermediate level. Students continue to hone their conversational, reading and writing skills in the language. Students are introduced to the imperative and subjunctive mood of verbs. The course includes a brief review of grammar and students learn to use reflexive verbs, express commands, and express opinions in the language. Both Brazilian and European Portuguese modalities are explored. The course also includes a variety of cultural, social and political realities of the entire and diverse Portuguese-speaking world, in particular those of Brazil and Portugal. The students will be exposed to everyday “real-life” situations, practical vocabulary and more specific grammar.
Prerequisites: PTG-112 or permission of department chair.

Psychology (PSY)

Courses

PSY-112. Career Development. 3 Credits.
LECT 3 hrs.
An in-depth exploration of the role of societal norms and educational and psychological factors upon individual career choices. Students establish, change or confirm career goals and learn skills necessary for ongoing career and life planning.

PSY-113. General Psychology. 3 Credits.
LECT 3 hrs.
An introductory survey of the scientific studies of human behavior on the following topics: human development, physiology, learning, individual differences, motivation, perception, personality, abnormal and social behavior. The course is designed to prepare the student for further study of the broad spectrum of psychology.

PSY-116. Psychology and Education of the Disabled. 3 Credits.
LECT 3 hrs.
A study of the social, emotional, physical and learning characteristics of individuals with disabilities. Methods of diagnosis and differentiation, curriculum, teaching techniques, resources and integration into the community are examined.
Prerequisites: PSY-113.

PSY-117. Health Psychology. 3 Credits.
LECT 3 hrs.
This course examines the effects of the physical, mental, cultural and environmental stressors on one's mental and physical health. Modern and ancient beliefs regarding the interaction of the mind and body are presented.
Prerequisites: PSY-113.

PSY-180. General Psychology - Honors. 3 Credits.
LECT 3 hrs.
This honors course is a more advanced General Psychology course which includes, but is not restricted to, a more advanced text, emphasis on research methodology, and lectures which explore subject matter in greater depth. The course introduces students to the scientific study of behavior with emphasis on critical thinking skills. Students improve their abilities to analyze data objectively both in written and oral presentations. The General Psychology Honors section can be used to fulfill the Honors Social Science elective. Admission to the course is based on the recommendation of the honors advisor only.
Prerequisites: Permission of department chair or honors advisor.
PSY-213. Child Psychology. 3 Credits.
LECT 3 hrs.
The course consists of the interplay of biological, psychological and cultural forces that shape the growing child from prenatal development through adolescence. Students learn to interpret relevant research using a critical-thinking approach.
Prerequisites: PSY-113.

PSY-214. Adolescent Psychology. 3 Credits.
LECT 3 hrs.
An examination of adolescence, the transitional period between childhood and adulthood. Issues covered include the adolescent in the context of family, school and work environments, emotional and cognitive changes and the maladapted adolescent.
Prerequisites: PSY-113.

PSY-215. Child Psychology - Honors. 3 Credits.
LECT 3 hrs.
This honors course consists of the interplay of biological, psychological and cultural forces that shape the growing child from prenatal development through adolescence. Students learn to interpret relevant research using a critical-thinking approach.
Prerequisites: PSY113 or PSY-180 and permission of honors advisor.

PSY-217. Educational Psychology. 3 Credits.
LECT 3 hrs.
This course introduces the student to psychological theory as it applies to teaching and learning. Topics include learning theory, motivation, tests and measurements, classroom management and teaching students with special needs. Educational Psychology is strongly recommended for students pursuing a career in teaching.
Prerequisites: PSY-113.

PSY-218. Cross-Cultural Psychology. 3 Credits.
LECT 3 hrs.
The student is exposed to the psychological experiences and individual differences in cognitive, emotional and behavioral development of individuals who represent diverse populations within the United States and learn how one’s self-perception and the perception of others affect well-being.
Prerequisites: PSY-113.

PSY-219. Developmental Psychology - the Human Lifespan. 3 Credits.
LECT 3 hrs.
The course considers the developing person from conception through death in terms of biosocial, cognitive and psychological development and discusses how these three domains interact. Additionally, it considers how contextual issues such as age, gender, culture, socioeconomic status and ethnicity broaden our understanding of human development.
Prerequisites: PSY-113.

PSY-221. Psychology of Personality. 3 Credits.
LECT 3 hrs.
An in-depth discussion of major personality theories and relevant research. There is a focus on application to case studies and life experiences.
Prerequisites: PSY-113.

PSY-225. The Maladapted Personality. 3 Credits.
LECT 3 hrs.
This course considers the tools involved in distinguishing abnormal from normal behavior. It surveys the range of mental disorders included in the American Psychiatric Association's Diagnostic and Statistical Manual including anxiety disorders, depression, addictions, problems of children and the elderly, deviance and schizophrenia, and covers modern treatment interventions.
Prerequisites: PSY-113.

PSY-229. Community Mental Health. 3 Credits.
LECT 3 hrs.
A survey of institutional and community-based mental health programs of prevention and treatment, sources of environmental stress, identification of high risk groups, and the role of professionals and volunteers in the field.
Prerequisites: PSY-113 or an introductory course in Sociology.

PSY-290. Independent Study in Psychology. 3 Credits.
LECT 3 hrs.
The design, development and implementation of individual research from formulation of hypothesis to analysis of results in the field of psychology.
Prerequisites: Permission of department chair.

PSY-291. Special Topics in Psychology. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Psychology. Topics differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: PSY-113.

PSY-292. Honors Abnormal Psychology. 3 Credits.
LECT 3 hrs.
This honors course is an in-depth coverage of the assessment, diagnosis and treatment of psychological disorders as categorized by the American Psychiatric Association's Diagnostic and Statistical Manual. Students are required to complete a research project using the American Psychological Association format.
Prerequisites: PSY-113 or PSY-180 and permission of Honors Advisor.

Public Administration (PUB)

Courses

PUB-111. Public Administration. 3 Credits.
LECT 3 hrs.
A survey of the practices and political relationships in public administration. Leadership, decision-making, personnel, and budgetary functions within governmental agencies are examined. The role of the public administrator in contemporary government is analyzed. The implementation of public policy at all levels of government, with emphasis on state and municipal institutions, is covered.

PUB-250. Field Experience-Public Administration. 3 Credits.
LECT 3 hrs.
Public Administration majors only. The student is expected to participate in the activities of an administrative agency under the joint supervision of a faculty member and the agency. Introduction and review sessions are conducted by a faculty member.
Prerequisites: PUB-111.
PUB-291. Special Topics in Public Administration. 3 Credits.
LECT 3 hrs.
An examination of selected topics of issues in Public Administration. Topics differ each time the course is offered. Students should consult the department chair for further information.

PUB-292. Special Topics in Public Administration. 3 Credits.
LECT 3 hrs.
An examination of selected topics of issues in Public Administration. Topics differ each time the course is offered. Students should consult the department chair for further information.

Public Health (PBH)

Courses

PBH-101. Principles of Public Health. 3 Credits.
LECT 3 hrs.
This course provides a broad overview of the many facets of public health, including, but not limited to historical perspectives, communicable disease, epidemiology, health policy, environmental health, emergency preparedness, and social, cultural, and behavioral aspects of health across the life span. It will describe public health infrastructure, delivery of services at the local, state and national levels, and the core competencies for public health professionals.

Radiography (RAD)

Courses

RAD-100. Introduction to Radiography. 2 Credits.
LECT 2 hrs.
Introduction to Radiography is the study of the fundamental elements of the health system, patient care and the profession of Radiography. The concepts of ethics, law, medical asepsis, vital signs, communicable disease and medical emergencies are presented in this course.
Prerequisites: Admission to Professional Phase and permission of department chair
Corequisites: RAD-104, RAD-107, MAT-140.

RAD-104. Principles of Radiography I. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course is designed to provide students with the necessary theory, concepts and hands-on experience in performing specific diagnostic procedures. Patient positioning, equipment manipulation, radiation protection techniques, appropriate patient care techniques and critique of radiographic images are presented in this course. Body areas covered include chest, abdomen, upper and lower extremities.
Prerequisites: Admission to Professional Phase; permission of department chair
Corequisites: BIO-101, RAD-100, RAD-107, MAT-140
Additional Fees: Course fee applies.

RAD-107. Radiography Clinical Practice I. 1 Credit.
CLIN 8 hrs.
This course provides students with an opportunity to apply concepts learned in Radiography I and Introduction to Radiography. Some of the tasks include operating equipment appropriately, applying basic patient care and positioning the patient accurately.
Prerequisites: Admission to Professional Phase - permission of department chair
Corequisites: RAD-100, RAD-104, MAT-140
Additional Fees: Course fee applies.

RAD-110. Radiation Biology and Physics. 3 Credits.
LECT 3 hrs.
The study of physics and electronics involved in the production, use and control of the various electromagnetic energies used in medical and diagnostic applications.
Prerequisites: RAD-100, RAD-104, RAD-107, MAT-140
Corequisites: RAD-114, RAD-117.

RAD-114. Principles of Radiography II. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of Radiography II reinforces basic concepts presented in Principles of Radiography I. Body areas covered include the hip, pelvis, bony thorax, entire spine, upper and lower GI tract, biliary system and the urinary system.
Prerequisites: RAD-100, RAD-104, RAD-107, MAT-140
Corequisites: BIO-102, RAD-110, RAD-117
Additional Fees: Course fee applies.

RAD-117. Radiography Clinical Practice II. 2 Credits.
CLIN 16 hrs.
Students are allowed the opportunity to put into practice the course material introduced in this and previous semesters. Opportunities for more responsibility and independence with previously learned procedures are provided. Students demonstrate competency of procedures learned in Radiography I. Also included is film critique in which the student evaluates radiographs.
Prerequisites: RAD-100, RAD-104, RAD-107, MAT-140
Corequisites: RAD-110, RAD-114
Additional Fees: Course fee applies.

RAD-120. Intermediate Clinical Practice. 3 Credits.
CLIN 32 hrs.
This 11-week clinical experience allows students the opportunity to put into practice and demonstrate competency of procedures learned in Principles of Radiography I and II. A weekly film critique class for students to evaluate radiographs also is included.
Prerequisites: RAD-110, RAD-114, RAD-117
Additional Fees: Course fee applies.

RAD-200. Pathology for Radiography. 2 Credits.
LECT 2 hrs.
This pathology course is an assessment of medical and surgical diseases designed to familiarize the student with changes caused by disease in relationship to radiography. Student projects, associated film presentations and critiques are also included.
Prerequisites: RAD-120
Corequisites: RAD-204, RAD-213.
RAD-204. Principles of Radiography III. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Principles of Radiography III is a study of the anatomy and positioning of the skull and facial bones. Pediatric, geriatric, trauma and mobile radiography are also included.
Prerequisites: RAD-120
Corequisites: RAD-207, RAD-213
Additional Fees: Course fee applies.

RAD-207. Radiologic Special Imaging. 3 Credits.
LECT 3 hrs.
This course provides students with a basic understanding of the more advanced and complex diagnostic procedures. Students are introduced to such procedures as, but not limited to, myelography, arthrogram, venography, and hysterosalpingography. The basic concepts of pharmacology, venipuncture and contrast agents are included.
Prerequisites: RAD-120
Corequisites: RAD-204, RAD-213.

RAD-210. Radiographic Exposure. 3 Credits.
LECT 3 hrs.
This course will acquaint students with the many methods of routine and special technical factors available to radiographers to create diagnostic radiographs. Emphasizing the various accessory devices that may affect radiograph production, each student comes to understand how technique can significantly affect image quality. Students learn what technical factors can safely be used, aware that radiation physics, radiation protection and quality assurance are interfaced with the principles of radiographic exposure. In addition, upon completion of this course students are able to construct a functional safe technique chart.
Prerequisites: RAD-110, RAD-120
Corequisites: RAD-204, RAD-207.

RAD-213. Radiography Clinical Practice III. 2 Credits.
CLIN 16 hrs.
Students are allowed the opportunity to put into practice the course material introduced in this and previous semesters. The course also gives the student more responsibility and independence with procedures that have been deemed competent. Also included is film critique in which students evaluate radiographs.
Prerequisites: RAD-120, RAD-114, RAD-117
Corequisites: RAD-204, RAD-207, RAD-210
Additional Fees: Course fee applies.

RAD-220. Principles of Radiography IV. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Students become acquainted with the various components to a Radiologic Quality Assurance Program stressing the significant role a quality assurance program must play in the field of Radiography. Students also study the effect of various appropriate types of electromagnetic radiation and their effect upon living tissues and learn the importance of radiation protection for patients and personnel. A complete review of all radiography procedures also is provided.
Prerequisites: RAD-204, RAD-213, RAD-207, RAD-200, RAD-210
Corequisites: RAD-227
Additional Fees: Course fee applies.

RAD-224. Advanced Imaging. 2 Credits.
LECT 2 hrs.
The course presents the advanced imaging techniques required by nuclear medicine, diagnostic medical sonography, radiation therapy, mammography, computed tomography and magnetic resonance imaging. The basic concepts and principles of cardiac and vascular interventional radiography are also discussed.
Prerequisites: RAD-207, RAD-200, RAD-210, RAD-204, RAD-213

RAD-227. Radiography Clinical Practice IV. 2 Credits.
CLIN 16 hrs.
This course provides students with an opportunity to refine skills learned in previous radiography clinical courses. Continuous practice is performed to improve technique and procedures. Students complete all remaining competencies for the program.
Prerequisites: RAD-204, RAD-213, RAD-207, RAD-200, RAD-210
Corequisites: RAD-220, RAD-224
Additional Fees: Course fee applies.

RAD-230. Advanced Clinical Practice. 3 Credits.
CLIN 32 hrs.
This 11-week course provides students the opportunity to exercise independent judgment and discretion in the technical performance of medical imaging procedures. Students complete the terminal competency evaluations for the program. This final session of clinical education ensures that the student is ready for employment.
Prerequisites: RAD-227, RAD-224, RAD-220
Additional Fees: Course fee applies.

Respiratory Therapy (RTH)

Courses

RTH-199. Respiratory Therapeutics. 5 Credits.
LECT 4 hrs., LAB 3 hrs.
An introduction to respiratory care, including history of the profession, ethical and legal responsibilities of the respiratory therapist; medical terminology, basic respiratory care procedures including the physics, physiology and administration of medical gas therapy, basic patient communication and assessment skills. Basic respiratory care procedures, humidity and aerosol therapy, hyperinflation therapy, chest physiotherapy and bronchial hygiene; an overview of microbiology as applied to respiratory care; infection control; and equipment sterilization procedures. Course requires that students have completed the pre-professional phase of the Respiratory Therapy program and have permission of the program director to enroll.
Prerequisites: Permission of Program Director
Additional Fees: Course fee applies.

RTH-202. Cardiopulmonary Pharmacology. 2 Credits.
LECT 2 hrs.
An overview of general pharmacology, including routes of administration, federal regulations, dosages and calculations, and safety precautions; an in-depth study of drugs administered to the respiratory patient, including chemical structure, mechanism of action, indications, contraindications, physiologic effects and side-effects.
Prerequisites: BIO-101, BIO-102, CHM-117 and CHM-118 and permission of department chair.
RTH-203. Cardiopulmonary Physiology. 2 Credits.
LECT 2 hrs.
A study of physiologic mechanisms of the cardiopulmonary system, including a review of the anatomy of the pulmonary and circulatory systems; ventilatory mechanics, gas diffusion, physiology of internal and external respiration, oxygen transport, carbon dioxide elimination, acid-base balance, ventilation perfusion relationships; and the neurologic control of ventilation.
Prerequisites: BIO-101, BIO-102 and permission of program director.

RTH-204. Cardiopulmonary Evaluation. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
Techniques of patient assessment and diagnostic evaluation of the cardiopulmonary system, including physical assessment, arterial blood gas analysis, pulmonary function testing, noninvasive monitoring of oxygenation and ventilation; an overview of laboratory tests, chest radiographs, electrocardiograph testing and interpretation and hemodynamic monitoring.
Prerequisites: RTH-199, RTH-202, RTH-203, RTH-210
Corequisites: RTH-205, RTH-206, RTH-211
Additional Fees: Course fee applies.

RTH-205. Cardiopulmonary Pathophysiology. 2 Credits.
LECT 2 hrs.
An overview of the pathophysiology of diseases of the cardiopulmonary system with an emphasis on pathophysiologic processes such as hypoxemia, hypoventilation, diffusion defects and ventilation perfusion mismatch; a survey of diseases encountered by the respiratory therapist, including pathophysiology, diagnostic methods and findings, clinical manifestations, treatment and prognosis.
Prerequisites: RTH-203 and permission of program director.

RTH-206. Mechanical Ventilation. 4 Credits.
LECT 3 hrs., LAB 3 hrs.
Techniques of airway management and the provision of mechanical ventilation; includes types of airways and appropriate uses; the physics and physiology of mechanical ventilation; classification of mechanical ventilators; indications for clinical application and complications of mechanical ventilation; management and monitoring of the patient requiring ventilatory support; and appropriate methods of withdrawing ventilatory support.
Prerequisites: RTH-199, RTH-202, RTH-203, RTH-210
Corequisites: RTH-204, RTH-205, RTH-211
Additional Fees: Course fee applies.

RTH-207. Neonatal and Pediatric Respiratory Care. 2 Credits.
LECT 2 hrs.
An overview of fetal development of the cardiopulmonary system with an emphasis on circulatory transitions and respiratory complications occurring at birth and in the neonatal period; a review of neonatal and pediatric respiratory disorders with an emphasis on clinical findings and treatment; a survey of respiratory care procedures as applied to the neonatal and pediatric patient, including oxygen therapy, humidity and aerosol therapy, diagnostic testing and mechanical ventilation.
Prerequisites: RTH-204, RTH-205, RTH-206, RTH-211
Corequisites: RTH-208, RTH-212.

RTH-208. Advanced Respiratory Care. 2 Credits.
LECT 2 hrs.
A survey of current events and state-of-the-art modalities in respiratory care; includes respiratory care in non-traditional settings, cardiopulmonary rehabilitation, controversies in clinical practice, and changes in health care affecting the respiratory care profession. Students are required to complete advanced cardiac life support (ACLS) certification through the American Heart Association.
Prerequisites: RTH-204, RTH-205, RTH-206, RTH-211
Corequisites: RTH-207, RTH-212.

RTH-210. Clinical Practice I. 3 Credits.
CLIN 16 hrs.
A supervised clinical application of the respiratory care procedures covered in Respiratory Therapeutics including chart review, patient and health professional communication, basic patient assessment, assembly and monitoring of oxygen therapy, aerosol and humidity therapy, aerosolized drug administration, hyperinflation therapy, bronchial hygiene and evaluation of patient response.
Prerequisites: Permission of department chair
Corequisites: RTH-199, RTH-202, RTH-203
Additional Fees: Course fee applies.

RTH-211. Clinical Practice II. 3 Credits.
CLIN 16 hrs.
Continued refinement of the skills covered in Clinical Practice I, in a general care environment, with an emphasis on clinical competence in providing basic respiratory care; followed by an introduction to the critical care environment and to respiratory care of the critically ill patient, with an emphasis on patient assessment and monitoring skills, and patient safety. Supervised application of the skills covered in Mechanical Ventilation and Cardiopulmonary Evaluation, including specialty rotations in ECG, the operating room, pulmonary function testing and blood gas laboratory, and physician offices.
Prerequisites: RTH-199, RTH-202, RTH-203, RTH-210
Corequisites: RTH-204, RTH-205, RTH-206
Additional Fees: Course fee applies.

RTH-212. Clinical Practice III. 4 Credits.
CLIN 32 hrs.
Continued refinement of the skills needed to function in a critical care environment with an emphasis on clinical competence in hemodynamic and advanced monitoring and management of the patient on mechanical ventilation. An emphasis is placed on interaction with other members of the healthcare team, patient care planning, clinical decision making and independent practice. Includes specialty rotations in neonatal and pediatric respiratory care, post open heart recovery and home care. The clinical fee includes the cost of the required National Board of Respiratory Care Self-Assessment Examination (NBRC SAE).
Prerequisites: RTH-204, RTH-205, RTH-206, RTH-211
Corequisites: RTH-207, RTH-208
Additional Fees: Course fee applies.

RTH-292. Special Topics in Respiratory Care. 2 Credits.
LECT 2 hrs.
An examination of selected topics or issues in Respiratory Therapy. Topics differ each time the course is offered. Students should consult the program director for further information.
Prerequisites: RTH-199 or permission of department chair
Corequisites: RTH-207, RTH-212.

Russian (RUS)
Courses

RUS-111. Elementary Russian I. 3 Credits.
LECT 3 hrs.
Not for native speakers. See department chair. This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated.

RUS-112. Elementary Russian II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Russian expand their study of basic Russian pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes imperative words, dative, accusative, and prepositional cases, plural of nouns and demonstrative pronouns. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Russian language proficiency. The cultural context of the language is also covered.
Prerequisites: RUS-111 or permission of department chair.

RUS-211. Intermediate Russian I. 3 Credits.
LECT 3 hrs.
The course is intended for students whose study of the first year of this language is recent and who wish to hone their skills. It includes a continuation of grammar, conversation and some compositions on cultural subjects. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Russian language proficiency. The cultural context of the language is also covered.
Prerequisites: RUS-112 or permission of department chair.

RUS-212. Intermediate Russian II. 3 Credits.
LECT 3 hrs.
The course is intended for students to attain intermediate to advanced skills. It includes a continuation of grammar and conversation. Readings from Russian literature and compositions are required. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Russian language proficiency. The cultural context of the language is also covered.
Prerequisites: RUS-211 or permission of department chair.

Sci-118. General Astronomy. 4 Credits.
LECT 3 hrs., LAB 2 hrs.
This course is a scientific exploration of the human place in the universe. Studied are the origin and history of the Universe and the formation of the Earth and solar system. The Earth's properties are compared with those of the other planets. Also covered are exciting contemporary topics such as global warming, black holes and dark matter. Although largely descriptive, the course occasionally requires the use of algebra and geometry-level mathematics.
Prerequisites: MAT-016 or equivalent
Additional Fees: Course fee applies.

Sociology (SOC)

Courses

SOC-108. Cultural Geography. 3 Credits.
LECT 3 hrs.
The study of the interaction of contemporary cultures and their physical environment. This course examines processes of globalization and their impact on national and local level social processes. Emphasis is placed on the global capitalist economy and its relation to national economies, political systems, populations, environments and religions.

SOC-110. Sociology of Health and Illness. 3 Credits.
LECT 3 hrs.
An analysis of the structure and function of health institutions in society with emphasis on the social psychology of illness behavior, the practitioners of medicine, the social organization of the hospital, managed care and future trends in medical care.

SOC-118. Sociology of Work and Occupations. 3 Credits.
LECT 3 hrs.
Examination and analysis of the world of work and occupations in modern society. Sociological and anthropological techniques are used to investigate work and careers and their effect on lifestyles. Students gain personal insights through research which investigates different ways of making a living and the consequences on individual lives.

SOC-120. Principles of Sociology. 3 Credits.
LECT 3 hrs.
A comprehensive introduction to the discipline of sociology, examining the basic concepts, e.g., role, status, social structure, research methods, culture, socialization, stratification, norms, values, groups, associations, institutions, community, deviance and society, as well as exploring its foundations and history, and techniques of seeing and understanding the world from a sociological perspective.

SOC-180. Principles of Sociology - Honors. 3 Credits.
LECT 3 hrs.
A systematic introduction to basic sociological concepts, culture, norms, status, role, groups, character structure, association, institutions, community, deviance and society.
Prerequisites: Permission of department chair or honors advisor.
SOC-202. Contemporary Social Issues - America As a Diverse Society. 3 Credits.
LECT 3 hrs.
Investigates issues that challenge citizens in post-modern America. Scientific analysis of topics such as global, political and economic trends, inequality, group conflicts, pluralism, urbanism, alienation and bureaucracy, family disorganization, mass communications, addictive behaviors and social movements. Special attention is given to field research which develops student competence in understanding contemporary social issues.
Prerequisites: SOC-120.

SOC-206. Religion and Human Experience. 3 Credits.
LECT 3 hrs.
An interdisciplinary course with sociological, psychological and anthropological perspectives on religion. Topics include interactions between the individual, society and religion, ritual and religious experience, religious organization and secularization. Comparisons are made between western and non-western religious systems. The rise of fundamentalism and new religious consciousness are also considered.
Prerequisites: An introductory course in Anthropology, Psychology or Sociology.

SOC-209. The Family. 3 Credits.
LECT 3 hrs.
Analysis of marriage and family in various cultures with in-depth study of the contemporary United States including historical development and future trends. Topics covered are romantic love, courtship, marital interaction, divorce, gender roles and the feminist movement. Special attention is given to the post-modern family and cross-cultural comparisons are made
Prerequisites: SOC-120.

SOC-210. Sociology of Aging. 3 Credits.
LECT 3 hrs.
Introduction to the study of aging and old age. The process of aging, social roles, population trends, economic and political activity, and family life. Middle-age and the transition to old age in modern societies are discussed. Field projects are assigned.
Prerequisites: SOC-120.

SOC-214. Cultural Diversity in America - the Sociology of Ethnic and Minority Groups. 3 Credits.
LECT 3 hrs.
A study of diversity in American life with an emphasis on the cultural, political and interactional patterns of ethnic and minority groups. Topics covered include assimilation, intergroup cooperation and conflict, cross-cultural communication, and theories of prejudice and discrimination. Attention is also given to national and global demographic trends.
Prerequisites: SOC-120.

SOC-215. Physical Anthropology. 3 Credits.
LECT 3 hrs.
The study of humankind emphasizing human evolution with the integration of recent research in the areas of paleontology, primatology, human genetics and ethology. Objectives of the course are to provide a knowledge of humankind's biological and physical heritage with emphasis on origins and variations.

SOC-216. Cultural Anthropology. 3 Credits.
LECT 3 hrs.
An introduction to the analysis of non-western cultures and anthropological theory and methods. Emphasis is placed on the comparison of western and non-western cultures, including cross-cultural comparisons of political, economic, social and cognitive systems.

SOC-217. Archaeology. 3 Credits.
LECT 3 hrs.
Introduction to the general principles of archaeological research and theory. An overview of human history and prehistory as evidenced through material remains, including the rise of state-level societies in the old and new worlds.

SOC-221. Sociology of Gender. 3 Credits.
LECT 3 hrs.
An in-depth introduction to social science theory and research in the field of gender studies. The new scholarship on women's issues, feminism and gender relations is examined and critiqued.
Prerequisites: SOC-120.

SOC-222. Deviant Behavior. 3 Credits.
LECT 3 hrs.
A review of deviant behavior by various deviant, outsider or disvalued members of a society, with emphasis on the environmental (socio-cultural) causes, the rewards and punishments of conforming or not conforming to group norms, the identification of deviants, the process of becoming prejudiced, why people conform, why people like each other, and the dynamics of groups. Topics are examined in a cross-cultural and historical perspective.
Prerequisites: SOC-120.

SOC-224. Social Psychology. 3 Credits.
LECT 3 hrs.
A study of group behavior and the influence of groups on the perception, thinking and behavior of the individual. Topics are chosen from the following: social influences on the development of personality and attitudes, the causes of human aggression, the nature of prejudice, why people conform, why people like each other, and the dynamics of groups. Topics are examined in a cross-cultural and historical perspective.
Prerequisites: PSY-113 or SOC-120.

SOC-230. Sociology of Globalization. 3 Credits.
LECT 3 hrs.
A study of group behavior and the influence of groups on the perception, thinking and behavior of the individual. Topics are chosen from the following: social influences on the development of personality and attitudes, the causes of human aggression, the nature of prejudice, why people conform, why people like each other, and the dynamics of groups. Topics are examined in a cross-cultural and historical perspective.
Prerequisites: PSY-113 or SOC-120.

SOC-280. Contemporary Social Issues - Honors. 3 Credits.
LECT 3 hrs.
Scientific analysis of major social institutions and major social issues. Problems covered include race and ethnic relations, urbanism and population, as well as fundamental institutional problems of economics, politics, education and family. Emphasizes social theory and methods of social research.
Prerequisites: SOC-180 or SOC-120 and permission of department chair or honors advisor.
Spanish (SPN)

Courses

SPN-111. Elementary Spanish I. 3 Credits.
LECT 3 hrs.
This course is intended for students with no prior knowledge of, or with limited background in, the language. Emphasis is on fundamentals of conversation, reading and writing. Practice in pronunciation, basic vocabulary and the essentials of grammar is incorporated. Not for students with two or more years of high school Spanish. See department chair. Not for native speakers, that is, not for speakers that grew up and/or studied in a Spanish-speaking country.

Prerequisites: SPN-112 or permission of department chair.

SPN-112. Elementary Spanish II. 3 Credits.
LECT 3 hrs.
Students with one prior semester of Spanish expand their study of basic Spanish pronunciation, vocabulary and grammar of an elementary nature. Grammar study includes past tenses, the present progressive tense, the verb gustar, direct and indirect object pronouns, adjectives, reflexive verbs, and prepositions. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Spanish language proficiency. The cultural context of the language is also covered.

Prerequisites: SPN-111 or permission of department chair.

SPN-211. Intermediate Spanish I. 3 Credits.
LECT 3 hrs.
This course expands the Spanish vocabulary, grammar, reading and writing skills of those students wishing to continue work towards an intermediate knowledge of the Spanish language. Grammar study includes expanded use of prepositions, relative pronouns, preterit and imperfect tenses, commands, and an introduction to the subjunctive mood. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Spanish language proficiency. Cultural aspects are also discussed.

Prerequisites: SPN-212 or permission of department chair.

SPN-212. Intermediate Spanish II. 3 Credits.
LECT 3 hrs.
This course expands the Spanish vocabulary, grammar, reading and writing skills of those students wishing to attain an intermediate knowledge of the Spanish language. Grammar study includes general tenses in the indicative and subjunctive moods. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Spanish language proficiency. Cultural aspects are also discussed.

Prerequisites: SPN-211 or permission of department chair.

SPN-213. Survey of Latin American Literature: Pre-Columbian to the Present. 3 Credits.
LECT 3 hrs.
This course provides a historical and critical overview of Latin American literature beginning with pre-Columbian myths and poetry, and continuing through the literature of the conquest and the colonies, independence, Romanticism, Modernism, Postmodernism, the mid-twentieth century “Boom” and the Post-Boom on up to the present. Major writers may include Hernán Cortés, Sor Juana Inés de la Cruz, Darío, Martí, Neruda, Paz, García Márquez, Poniatowska, Valenzuela and Allende. The course is conducted entirely in Spanish.

Prerequisites: SPN-212 or permission of department chair.

SPN-214. Advanced Spanish Conversation. 3 Credits.
LECT 3 hrs.
Advanced Spanish Conversation instructs students conversant in Spanish in the correct and appropriate vocabulary, grammar and syntax for accurate spoken communication. Students deepen their understanding of idiomatic usage of the several Spanish-speaking countries through discussion of the varied themes explored by contemporary writers in short stories and other non-fiction readings, as well as consider shades of meaning inherent in their own syntactical and lexical choices. The varied readings and the interchange of ideas among the expected population of both American and Hispanic students support the cultural context of the language - the history, literature and art of the Hispanic people, and provide insight into the various ethnic and racial populations within each Spanish-speaking country and in the United States.

Prerequisites: SPN-212 or permission of department chair.

SPN-215. Advanced Spanish Composition. 3 Credits.
LECT 3 hrs.
Advanced Spanish Composition focuses on correct and appropriate written forms of communication in Spanish. The expository and argumentative essays are studied along with other special types of formal and informal writing. Students review spelling, syntax and grammar, and are expected to conduct extensive conversation in Spanish to elicit topics for writing projects. This course helps English speakers to develop new structures in Spanish syntax and understand to a greater extent aspects of Hispanic culture embodied in written forms. It also increases the knowledge of written structures of native speakers and expands their understanding of formal written language. Classes for this course are conducted entirely in Spanish.

Prerequisites: SPN-212 or permission of department chair.

SPN-216. Advanced Spanish Literature. 3 Credits.
LECT 3 hrs.
This course provides a historical and critical overview of Spanish Peninsular literature beginning with the Middle Ages and ending in the present. Among the literary periods to be covered are the Renaissance, the Baroque period, the Enlightenment, Romanticism, Realism, the Generations of 1898 and 1927, and post-Spanish Civil War, Don Juan Manuel, Garcilaso de la Vega, Santa Teresa de Jesús, Cervantes, Lope de Vega, Bequer, Perez Galdos, Unamuno, Machado, Lorca, Cela, Ana Maria Matute, and Carmen Martin Gaite. This course is conducted entirely in Spanish.

Prerequisites: SPN-212 or permission of department chair.

SPN-217. Advanced Spanish Grammar. 3 Credits.
LECT 3 hrs.
Advanced Spanish Grammar focuses on correct and appropriate grammar for the composition of the written form of Spanish. This includes a review of the subjunctive mood and its use in idiomatic constructions, and the correct use of possessive pronouns, articles, prepositions, verb conjugations, and adjectives. Emphasis is on the accurate portrayal of cultural context in collaborative writing projects.

Prerequisites: SPN-212 or permission of department chair.

SPN-218. Advanced Spanish Conversation. 3 Credits.
LECT 3 hrs.
Advanced Spanish Conversation instructs students conversant in Spanish in the correct and appropriate vocabulary, grammar and syntax for accurate spoken communication. Students deepen their understanding of idiomatic usage of the several Spanish-speaking countries through discussion of the varied themes explored by contemporary writers in short stories and other non-fiction readings, as well as consider shades of meaning inherent in their own syntactical and lexical choices. The varied readings and the interchange of ideas among the expected population of both American and Hispanic students support the cultural context of the language - the history, literature and art of the Hispanic people, and provide insight into the various ethnic and racial populations within each Spanish-speaking country and in the United States.

Prerequisites: SPN-212 or permission of department chair.

SPN-219. Advanced Spanish Composition. 3 Credits.
LECT 3 hrs.
Advanced Spanish Composition focuses on correct and appropriate written forms of communication in Spanish. The expository and argumentative essays are studied along with other special types of formal and informal writing. Students review spelling, syntax and grammar, and are expected to conduct extensive conversation in Spanish to elicit topics for writing projects. This course helps English speakers to develop new structures in Spanish syntax and understand to a greater extent aspects of Hispanic culture embodied in written forms. It also increases the knowledge of written structures of native speakers and expands their understanding of formal written language. Classes for this course are conducted entirely in Spanish.

Prerequisites: SPN-212 or permission of department chair.

SPN-220. Spanish Literature. 3 Credits.
LECT 3 hrs.
This course provides a historical and critical overview of Spanish Peninsular literature beginning with the Middle Ages and ending in the present. Among the literary periods to be covered are the Renaissance, the Baroque period, the Enlightenment, Romanticism, Realism, the Generations of 1898 and 1927, and post-Spanish Civil War, Don Juan Manuel, Garcilaso de la Vega, Santa Teresa de Jesús, Cervantes, Lope de Vega, Bequer, Perez Galdos, Unamuno, Machado, Lorca, Cela, Ana Maria Matute, and Carmen Martin Gaite. This course is conducted entirely in Spanish.

Prerequisites: SPN-212 or permission of department chair.

SPN-221. Intermediate Spanish I. 3 Credits.
LECT 3 hrs.
This course expands the Spanish vocabulary, grammar, reading and writing skills of those students wishing to continue work towards an intermediate knowledge of the Spanish language. Grammar study includes expanded use of prepositions, relative pronouns, preterit and imperfect tenses, commands, and an introduction to the subjunctive mood. Vocabulary and grammar support listening, reading, speaking and writing in an effort to enhance Spanish language proficiency. Cultural aspects are also discussed.

Prerequisites: SPN-212 or permission of department chair.

SPN-222. Survey of Latin American Literature: Pre-Columbian to the Present. 3 Credits.
LECT 3 hrs.
This course provides a historical and critical overview of Latin American literature beginning with pre-Columbian myths and poetry, and continuing through the literature of the conquest and the colonies, independence, Romanticism, Modernism, Postmodernism, the mid-twentieth century “Boom” and the Post-Boom on up to the present. Major writers may include Hernán Cortés, Sor Juana Inés de la Cruz, Darío, Martí, Neruda, Paz, García Márquez, Poniatowska, Valenzuela and Allende. The course is conducted entirely in Spanish.

Prerequisites: SPN-212 or permission of the department chair.
SPN-291. Special Topics in Spanish. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Spanish. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in Spanish or permission of department chair.

SPN-292. Special Topics in Spanish. 3 Credits.
LECT 3 hrs.
An examination of selected topics or issues in Spanish. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An advanced course in Spanish or permission of department chair.

**Telecommunications Systems Technology (TEL)**

**Courses**

TEL-107. Computers and Data Networks. 3 Credits.
LECT 3 hrs.
This course is an introduction to the terminology and standard practices of data networking, including concepts of essential computer components, data storage, network operating systems, computer networking models and communication framework for the transmission of voice, text and video data. Coverage includes various transmission media as well as an understanding of networking fundamentals.

TEL-109. Introduction to Telecommunications. 3 Credits.
LECT 3 hrs.
This course is an introduction to the terminology and standard practices of the telecommunications industry, including concepts of integrating office automation procedures with telecommunications networks (wired and wireless) using voice, data, text and video information. Coverage includes various transmission and switching media as well as an understanding of message routing hierarchies. Issues of regulation and deregulation are discussed together with equipment selection and management topics. The mechanics of the Internet also are introduced with a description of Voice over Internet Protocol (VoIP). Other topics covered include laser communication links, teleconferencing, data network protocols and architectures and satellite technology.

TEL-110. Routing I (CISCO CCNA 1). 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The course follows CISCO’s CCNA1 curriculum for Networking Basics. Lecture and laboratory assignments are an integral part of the course. The course focuses on network terminology and protocols, local area networks (LANs), wide area networks (WANs), Open System Interconnection (OSI) networking model, cabling, cabling tools, routers, router programming, Ethernet, Internet Protocol addressing/subnetting and network standards.
Additional Fees: Course fee applies.

TEL-120. Routing II (CISCO CCNA 2). 3 Credits.
LECT 2 hrs., LAB 3 hrs.
The course follows CISCO’s CCNA2 curriculum for Routers and Routing Basics. The course focuses on initial router configuration, CISCO IOS software management, routing protocol configuration, TCP/IP and access control lists (ACLs). Through lectures and laboratory assignments, students develop the skills to configure and maintain a router as well as the creation of software firewalls.
Prerequisites: TEL-110
Additional Fees: Course fee applies.

TEL-220. Routing III (CISCO CCNA3 and CCNA4). 4 Credits.
LECT 3 hrs., LAB 3 hrs.
This course follows CISCO’s CCNA3 curriculum for Switching and Intermediate Routing and CISCO’s CCNA4 curriculum for WAN Technologies. The first half of the course focuses on advanced IP addressing techniques (Variable Length Subnet Masking (VLSM), intermediate routing protocols (RIP v2, single-area OSPF, EIGRP), command-line interface configuration of switches, Ethernet switches, Virtual LANs (VLANs), Spanning Tree Protocol (STP) and VLAN Trunking Protocol (VTP). The second half of the course focuses on advances IP addressing techniques (Network Address Translation (NAT), Port Address Translation (PAT), and (DHCP), WAN terminology and technology, PPP, ISDN, DDR, Frame Relay, network management and an introduction to optical networking. Preparation is also given to the study of CISCO’s CCNA certification examination. Students learn through lecture and laboratory assignments.
Prerequisites: TEL-120
Additional Fees: Course fee applies.

TEL-232. Data Communication. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is a study of systems and equipment used in the transmission of data, interfacing data links to computers and troubleshooting of data links. Topics include VoIP (Voice over Internet Protocol), wireless technology, optical networking, serial interfaces, routing, link analysis, modems, data link and protocols, networking. The laboratory makes extensive use of protocol analysis for diagnostics.
Prerequisites: ELT-209 or TEL-110
Additional Fees: Course fee applies.

TEL-233. Network Operating Systems. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course is an introduction to various network operating systems. Emphasis is placed on the study of a server in a client/server computer network. Topics of study include installation of a network operating system, securing a system, creating users and groups, partitioning of hard drive, installation of transport protocols, creating and maintaining printers, event viewing, performance monitoring, registry modification, configuring a server, creating and maintaining the active directory and troubleshooting the network.
Additional Fees: Course fee applies.
TEL-234. Telecommunications Systems. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
This course includes the study of the elements of telecommunications systems, emphasizing both voice and digital communications. Telephone loop operation and signaling, central office interface, switching, routing, transmission protocols, network architecture, T1 multiplexing and high-speed transmission are major topics. Advanced telecommunications topics such as ISDN and DSL are studied. Laboratory includes configuration, maintenance and diagnostic telecommunication systems.
Prerequisites: ELT-209 or CMP-230 and TEL-110
Additional Fees: Course fee applies.

TEL-239. Cooperative Work Experience - Telecommunications Systems Technology. 3 Credits.
COOP 3 hrs.
This course is a field experience in the laboratory facilities of an industrial firm. Designed for students in Telecommunication Systems Technology programs to obtain industrial experience as a supplement to their college studies prior to career employment. Seminar evaluation visitations are included. Completion of the first year of the program is required to enroll.
Prerequisites: Permission of department chair.

TEL-290. Independent Study in Telecommunications Systems Technology. 3 Credits.
LECT 3 hrs.
Students, in consultation with a Telecommunications Technology advisor, undertake an in-depth analysis of a selected topic, problem or issue related to the telecommunications industry or pursue additional related work experience. Students are responsible for developing a statement of goals and strategies, maintaining a weekly log and preparing a written and oral summary report. Written permission must be obtained from the department before registering for this course.
Prerequisites: Permission of department chair.

TEL-291. Special Topics in Telecommunications Systems Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
These courses provide students with an examination of selected topics or issues in telecommunications systems technology. Topics may differ each time the course is offered. Students should consult a Telecommunications Technology advisor for additional information.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

TEL-292. Special Topics in Telecommunications Systems Technology. 3 Credits.
LECT 2 hrs., LAB 3 hrs.
These courses provide students with an examination of selected topics or issues in telecommunications systems technology. Topics may differ each time the course is offered. Students should consult a Telecommunications Technology advisor for additional information.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.
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