Programs of Study

College and University Transfer Programs – Associate in Arts (A.A.) or Associate in Science (A.S.)

Associate degree programs designed to transfer to a bachelor’s degree at a four-year college or university.

Career Programs – Associate in Applied Science (A.A.S.)

Career Programs Certificate

Certificates of competency or proficiency designed to prepare students for immediate employment.

Programs of Study

College/University Transfer Programs

- College/University Transfer Programs
- Behavioral Science-Anthropology A.S.
- Behavioral Science-Psychology A.S.
- Behavioral Science-Sociology A.S.
- Business Administration-Accounting Option A.S.
- Business Administration-General Business Option A.S.
- Business Administration-Management Option A.S.
- Business Administration-Marketing Option A.S.
- Business Administration-Sport Management Option A.S.
- Communication Arts-Applied Communication Option A.A.

Career Programs

- Accounting A.A.S.
- Administration of Justice A.A.S.
- Architectural Technology A.A.S.
- Automated Manufacturing/Robotics Technology A.A.S.
- Automotive Technology A.A.S., Certificate*
- Business Management A.A.S.
- Carpentry Certificate
- Child Development Associate Certificate*
- CNC Programming, Lathe & Mill Certificate
- Computer-Aided Drafting and Design Technology A.A.S., Certificate
- Computer-Aided Machining, Lathe, Mill & EDM Certificate
- Construction Management Technology A.A.S.
- Construction Supervision Certificate
- Early Childhood Education A.A.S.
- Early Childhood Director Certificate*
- Electrical Certificate
- Electronic Commerce A.A.S., Certificate
- Electronics Technology A.A.S.
- Emergency Services Technology Certificate
- Emergency Management and Planning A.A.S.
- Entrepreneurship Certificate
- Facility Management Technology A.A.S.
- General Business A.A.S.
- General Studies A.A.S.*
- Graphic Design A.A.S.
- Health Care Management A.A.S.
- Health Studies A.A.S.*
- Health Studies - Pre-Nursing Option A.A.S.*
- Health Unit Coordinator Certificate
- Heating, Ventilation, Air Conditioning, Refrigeration A.A.S., Certificate*
- Hotel and Restaurant Management A.A.S.
- Human Resource Management Certificate*
- Industrial Systems Technology A.A.S., Certificate*
- Information Technology - Computer Applications Option A.A.S.

*Designates degree programs that can be completed in Chester County.

Delaware County Community College is an equal employment and educational opportunity institution conforming to all applicable legislation that prohibits discrimination. The College does not discriminate on the basis of race, color, religion, sex, age, national origin, disability, veteran status, sexual orientation or any other characteristic protected by state or federal laws in its educational programs, activities, admission or employment policies, as required by Title IX of the Educational Amendments of 1972, Section 504 of the Rehabilitation Act of 1973 and other applicable statutes. Inquiries concerning Title IX and/or 504 compliance should be referred to: Betty Brown, associate dean for student success, room 2195, 610-359-5320; and/or Connie McCalla, vice president of human resources, room 3572, 610-359-5094. TTY for the hearing impaired: 610-359-5020.

Delaware County Community College is accredited by the Middle States Association of Colleges and Schools, Commission on Higher Education, 3624 Market St., Philadelphia, PA 19104.
Delaware County Community College

2010-2011 Catalog

Visit our website for our online catalog: www.dccc.edu/catalog

MISSION
The Mission of Delaware County Community College is to facilitate learning by providing quality educational programs and services that are student focused, accessible, comprehensive, and flexible to meet the educational needs of the diverse communities it serves. In doing so, the College will enable its students to develop themselves to the limit of their desires and capabilities, and to be successful.

DELWARE COUNTY

MARPLE CAMPUS
901 South Media Line Road
Media, PA 19063-1094
610-359-5000
TTY for the hearing impaired:
610-359-5020

SOUTHEAST CENTER
2000 Elmwood Avenue
Curtis Building
Sharon Hill, PA 19079
610-957-5700

CHESTER COUNTY

EXTON CENTER
906 Springdale Drive
Whiteland Business Park
Exton, PA 19341
610-450-6500

PENNOKS BRIDGE CAMPUS
280 Pennocks Bridge Road
Jennersville, PA 19390
610-869-5100

DOWNINGTOWN CAMPUS
100 Bond Drive
Downingtown, PA 19335
484-237-6200

www.dccc.edu

Delaware County Community College is accredited by the Middle States Association of Colleges and Schools, Commission on Higher Education, 3624 Market Street, Philadelphia, PA 19104.
DELAWARE COUNTY COMMUNITY COLLEGE

The Delaware County Community College Catalog serves as the College's official statement of its program and course offerings. As such, the catalog current in the year of a student's matriculation into any one of the College's programs determines that student's program requirements. As with any printed document of this nature, however, its currency becomes outdated quickly as faculty routinely update programs and courses to reflect the changing content and standards in any given field of knowledge. Consequently, students should also check the College's website to view the most current edition of the catalog.

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ABBREVIATIONS AND DEFINITIONS

The following abbreviations are used throughout the catalog and refer to courses within a specific discipline:

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<thead>
<tr>
<th>Abbreviation</th>
<th>Discipline</th>
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</thead>
<tbody>
<tr>
<td>ACC</td>
<td>Accounting</td>
</tr>
<tr>
<td>ADJ</td>
<td>Administration of Justice</td>
</tr>
<tr>
<td>AFA</td>
<td>Fine Arts</td>
</tr>
<tr>
<td>AHA</td>
<td>Health Administration</td>
</tr>
<tr>
<td>AHM</td>
<td>Allied Health Medical</td>
</tr>
<tr>
<td>AHN</td>
<td>Allied Health Nursing</td>
</tr>
<tr>
<td>AHS</td>
<td>Surgical Technology</td>
</tr>
<tr>
<td>AHU</td>
<td>Allied Health Unit Clerk</td>
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<tr>
<td>ARB</td>
<td>Arabic</td>
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<tr>
<td>ARC</td>
<td>Architecture</td>
</tr>
<tr>
<td>ART</td>
<td>Art</td>
</tr>
<tr>
<td>AUT</td>
<td>Automotive Technology</td>
</tr>
<tr>
<td>BIO</td>
<td>Biology</td>
</tr>
<tr>
<td>BUS</td>
<td>Business</td>
</tr>
<tr>
<td>CHE</td>
<td>Chemistry</td>
</tr>
<tr>
<td>COMM</td>
<td>Communication Studies</td>
</tr>
<tr>
<td>CPT</td>
<td>Carpentry</td>
</tr>
<tr>
<td>CSEL</td>
<td>College-Sponsored Experiential Learning</td>
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<tr>
<td>DPR</td>
<td>Computer Information Systems</td>
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<tr>
<td>DRA</td>
<td>Drama</td>
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<tr>
<td>ECE</td>
<td>Early Childhood Education</td>
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<td>ECO</td>
<td>Economics</td>
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<tr>
<td>EDU</td>
<td>Education</td>
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<tr>
<td>EGR</td>
<td>Engineering</td>
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<tr>
<td>ELT</td>
<td>Electrical</td>
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<tr>
<td>EMER</td>
<td>Emergency Management</td>
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<tr>
<td>EMS</td>
<td>Emergency Medical Services</td>
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<tr>
<td>ENG</td>
<td>English</td>
</tr>
<tr>
<td>ESL</td>
<td>English as a Second Language</td>
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<tr>
<td>ESS</td>
<td>Earth and Space Science</td>
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<tr>
<td>FRE</td>
<td>French</td>
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<tr>
<td>FST</td>
<td>Fire Science Technology</td>
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<tr>
<td>GER</td>
<td>German</td>
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<tr>
<td>GRA</td>
<td>Graphic Design</td>
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<tr>
<td>HIS</td>
<td>History</td>
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<td>HMT</td>
<td>Hazardous Materials Technology</td>
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<tr>
<td>HRM</td>
<td>Hotel and Restaurant Management</td>
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<tr>
<td>HUM</td>
<td>Humanities</td>
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<tr>
<td>HUS</td>
<td>Human Service</td>
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<tr>
<td>HVA</td>
<td>Heating, Ventilating, Air Conditioning and Refrigeration</td>
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<tr>
<td>IMM</td>
<td>Interactive Multimedia</td>
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<tr>
<td>INS</td>
<td>Insurance</td>
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<td>INT</td>
<td>Interdisciplinary</td>
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<tr>
<td>IST</td>
<td>Industrial Systems Technology</td>
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<td>ITA</td>
<td>Italian</td>
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<td>MAT</td>
<td>Mathematics</td>
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<td>MATH</td>
<td>Business Math</td>
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<td>MCR</td>
<td>Microcomputers in Business</td>
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<td>MPT</td>
<td>Municipal Police Training</td>
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<td>MTT</td>
<td>Machine Tool Technology</td>
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<td>MUS</td>
<td>Music</td>
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<tr>
<td>NET</td>
<td>Network Engineering</td>
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<td>NUS</td>
<td>Nursing</td>
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<td>OCS</td>
<td>Occupational Code Studies</td>
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<td>PCT</td>
<td>Process Control Technology</td>
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<td>PHI</td>
<td>Philosophy</td>
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<td>PHY</td>
<td>Physics</td>
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<td>PLB</td>
<td>Plumbing</td>
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<td>PLG</td>
<td>Paralegal</td>
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<td>POL</td>
<td>Political Science</td>
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<td>PSY</td>
<td>Psychology</td>
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<td>REA</td>
<td>Reading</td>
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<td>RTH</td>
<td>Respiratory Therapy Technology</td>
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<tr>
<td>RUS</td>
<td>Russian</td>
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<tr>
<td>SCI</td>
<td>Science</td>
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<tr>
<td>SOC</td>
<td>Sociology</td>
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<tr>
<td>SPA</td>
<td>Spanish</td>
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<tr>
<td>TCC</td>
<td>Technical Communications</td>
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<tr>
<td>TCS</td>
<td>Construction Technology</td>
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<tr>
<td>TDD</td>
<td>Drafting and Design Technology</td>
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<tr>
<td>TEC</td>
<td>Technologies</td>
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<tr>
<td>TEL</td>
<td>Electronics Technology</td>
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<td>TME</td>
<td>Mechanical Technology</td>
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<td>WLD</td>
<td>Welding</td>
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</table>

The following definitions may be helpful to students’ understanding of the educational culture of postsecondary education:

**Academic Record**: transcript of grades, courses, credits and related academic information kept on file by the College

**Accelerated Session**: a period less than the fifteen-week semester in which students can complete course work on an accelerated basis

**Associate's Degree (A.A., A.S., A.A.S.)**: a two-year degree that generally prepares students for further study or entry into the workplace

**Certificate**: recognition provided for completion of short-term vocational or career training programs

**Cooperative Education**: option to attend college and do paid work, receiving credit for both; also called co-op

**Credit**: the value assigned to a college course depending on the number of class hours per week. For example, a three-credit course meets three hours per week

**Elective**: an optional course selected by the student

**ESL (English as A Second Language)**: courses offered to non-native speakers to improve writing, reading and speaking skills in English

**FAFSA (Free Application for Federal Student Aid)**: a free financial aid application that must be submitted by students seeking grants and/or loans from state and federal governments, colleges and other sources

**GED (Tests of General Educational Development)**: a test for people who have not graduated from high school to confirm their mastery of information covered in a basic high school curriculum

**Major**: the program of study in which a student concentrates course work, time and attention

**Placement Test**: assessment given to new students to determine skill levels in English, reading and mathematics and their academic starting point

**Prerequisite**: a level of accomplishment required prior to enrolling in a particular course. For example, English Composition I is a prerequisite for English Composition II.

**Registration**: transaction through which students enroll in course work
To graduate, students must:
1. Earn a minimum of 60 credit hours, exclusive of basic, developmental and
   continuing education courses. Of these, at least 24 must be earned at
   Delaware County Community College with at least 15 hours in graded
   courses (courses for which grade points are issued) for the associate
   degree. Not more than 12 credit hours may be transferred back after
   completing attendance at this college. A maximum of three credits of
   physical education activities may be applied toward the 60 credit hours.
2. Have a cumulative grade point average of 2.0 (C) or higher.
3. Complete the approved curriculum satisfactorily. Curricula are itemized
   lists of courses and credits required for professional and technical
   competence. Additional curricula will be published in a series of special
   student bulletins. All approved curricula include courses required by the
   laws of the State of Pennsylvania and general education requirements.

Certificate of Proficiency
Delaware County Community College will award a certificate of proficiency to
students who complete 30 credits of an approved career program. These
credits will not normally include physical education, developmental, basic
and/or continuing education courses and will usually consist of 24 credits in
the career specialty and six credits in general education. Exceptions may be
made upon recommendation of the Academic Affairs Committee. At least 50
percent of the credits must be earned at Delaware County Community College.
The student must have a cumulative GPA of 2.0 or higher. At least six credit
hours must be in courses that are awarded grade points.

Certificate of Competency
The College will award a certificate of competency to students who complete
an approved credit-bearing career program that requires less than 30 credits.
General education courses may not be required for programs that have less
than 30 credits. The student must have a cumulative GPA of 2.0 or higher.
At least six credit hours must be in courses that are awarded grade points.
Certificates of Competency are awarded by the academic division.

Application for Graduation
Applications for graduation are available at the Main Campus Student
Records Office, and at off-campus locations, in October, March, and June
for December, May and August graduations respectively.

Dual and Additional Degrees
A student who has already received a Delaware County Community College
degree or certificate may qualify for an additional degree or certificate by 1)
meeting the requirements of the additional curriculum and 2) completing at
least 12 credits at the College subsequent to those received for the previous
degree or certificate.
For Delaware County Community College degree holders, the curriculum
leading to an additional degree or certificate must be different from the
previous degree(s). General Studies and Technical Studies may not be earned
as additional degrees. A degree at the College with options or concentrations is
considered one degree and will be awarded only once. Some curricula are very
similar, and students may not earn degrees in both. Some examples are: 1)  
Natural Science and Science for the Health Professions 2) Business
Administration and Business Management 3) Computer Information Systems
and Information Technology and 4) General Business and any of the following
majors: Business Administration, Business Management, Business Technology,
Accounting, Electronic Commerce and Small Business Management.
For Delaware County Community College certificate holders, the curriculum
leading to an additional certificate must be different from the previous
certificate(s) and the curriculum leading to a first degree can be the same as or
different from that of the certificate.
Students who complete all requirements for two degrees and at least 12
additional credits at the same time may receive two diplomas. General Studies,
Technical Studies, and other restrictions listed above under degree holders may
not be awarded as part of a dual degree. A certificate and degree in the same
or similar curricula may not be awarded at the same time. Students may
pursue no more than two degrees at one time and they must
inform their advisors of the intent to follow two degrees. They must
file two separate graduation applications and pay two graduation fees.

Graduation with Honors
The associate degree or certificate will be granted “With Honors” if a student
earns an overall average of 3.0 (B) in all courses applicable to the degree or
certificate. For those students with an overall average of 3.5, the award will be
“With High Honors.”
COLLEGE COMPETENCIES

Our Unique Advantage:

The Competency-Based Curriculum

Our competency-based curriculum makes the College different from every other community college in the region and most other post-secondary institutions. The competency-based curriculum certifies our graduates as possessing the skills, attitudes and values needed to perform competently in their area of study.

There are three kinds of competencies. College competencies are broad statements of the learning expected of all students. Curriculum competencies describe the skills and knowledge expected of students of specific programs. Course competencies describe the knowledge and skills a student must demonstrate to earn college credit for a course.

Competencies provide a distinct advantage to students, the educational institutions to which they transfer and future employers. They help transfer colleges determine the exchange of learning that has taken place. They help employers identify the skills a Delaware County Community College graduate should possess. They also assist the College in assessing student programs and non-traditional learning.

Course and curriculum competencies are listed with individual curricula and course descriptions elsewhere in this catalog.

College Competencies

The College competencies are the result of a concentrated effort to define and describe the skills and knowledge expected of our graduates. The following broad learning outcomes are expected of all graduates.

Competency 1

Graduates of Delaware County Community College should be proficient in mathematics, reading, writing and speech communication.

A. Mathematical proficiency denotes basic computational skills and analysis required for both life and career tasks. Therefore, graduates should be able to:
   1. Perform basic arithmetic calculations.
      a. Add, subtract, multiply and divide numbers.
      b. Use ratio, proportion, and percent.
      c. Estimate the answer to a problem.
   2. Use the concept of variable to solve problems involving equations and inequalities.
      a. Translate verbal data to algebraic expression, equations, or inequalities.
      b. Solve linear equations and inequalities.
      c. Use functions to express the relationship between one quantity and another.
      d. Evaluate algebraic expressions and formulas.
   3. Use concepts of geometry to solve problems involving measurement and shape.
      a. Use formulas to solve routine problems involving perimeter, area, volume, and angle measure.
      b. Describe the properties of geometric figures.
   4. Apply the principles of probability and statistics to interpret or predict events.
      a. Construct and interpret charts, tables, and graphs summarizing data.
      b. Use sampling techniques.
      c. Define the concepts of mean, mode, and median.
      d. Use the concept of probability to solve problems involving uncertainty.
   5. Use appropriate mathematical reasoning and problem solving strategies to draw logical conclusions from given information.
      a. Use inductive and deductive reasoning to reach conclusions.
      b. Solve problems using appropriate strategies.
      c. Translate a real-life situation into the language of mathematics.

B. Reading is defined as mental activity designed to recognize concepts literally and to interpret symbols; one reads for facts, for meaning, and for understanding and comprehension. Therefore, graduates should be able to:
   1. Determine the main idea of a written passage.
   2. Identify supporting details related to the main idea.
   3. Use a systematic approach to understanding a written passage (such as color coding key passages and note taking or outlining).
   4. Interpret a passage and integrate it into previous knowledge.

C. Writing is the expression of ideas using Standard English with conventional word choice, sentence order, and grammar. Therefore graduates should be able to:
   1. Analyze materials in a critical manner, incorporating the skills of reporting and interpreting.
   2. Evaluate oral and written material in relation to a topic.
   3. Narrow a topic to focus on a central idea.
   4. Create well-organized and varied sentences and paragraphs, using precise word choice.
   5. Write well-organized and logical critical essays on a variety of topics, using an acceptable style, a minimum of errors, and sound supportive data.

D. Speech Communication is the oral expression of ideas using both verbal and non-verbal language. Therefore, graduates should be able to:
   1. Speak in a clear and concise manner.
   2. Describe and use both verbal and non-verbal communication.
   3. List the barriers to communication such as angry tone of voice or prejudicial language.
   4. Implement the skills of listening through active participation and feedback.

Competency 2

Graduates of Delaware County Community College should have a concept of self (needs, abilities, interests, values) and be able to explain the relationship of self to others necessary for making value judgments for satisfying and productive lives.

Therefore, graduates should be able to:
   1. Respect others' values, ways of living, ethnicity and gender.
   2. Illustrate that learning (in cognitive, affective, skill and value domains) can improve one's self in relation to others.
   3. Set realistic short- and long-range goals (as in employment, social and personal objectives).
   4. Have confidence to take risks by recognizing talents and limitations.
   5. Distinguish between fact and opinion and defend an opinion with logic (e.g., serve on a jury).

Competency 3

Graduates of Delaware County Community College should apply the meaning of career, defined as a whole life endeavor, to make career choices appropriate to individuals’ own needs, abilities, interests, values and education.

Therefore, graduates should be able to:
   1. Plan career paths to include both vocational and avocational interests.
   2. Demonstrate that each employment situation is a step toward fulfillment of career paths.
   3. Evaluate employment opportunities for appropriateness in regard to career paths.
   4. Select learning experiences necessary to progress on career paths.
   5. Display flexibility and responsibility in revising career paths in response to changes in society and their personal lives.
Competency 4

Graduates of Delaware County Community College should have the skills to pursue lifelong learning.
Therefore, graduates should be able to:
1. Demonstrate that learning is a lifelong process.
2. Explore beyond discipline/career boundaries to envision a broader awareness of self.
3. Select learning experiences that complement and enrich previously learned information.
4. Welcome the opportunity for change where appropriate.

Competency 5

Graduates of Delaware County Community College should be able to use decision-making processes to solve problems.
Therefore, graduates should be able to:
1. Identify and define problems in terms of objectives, goals and constraining factors.
2. Collect data regarding proposed solutions with respect to problems.
3. Evaluate possible solutions, hypotheses, or testable propositions.
4. Assess the process by which a problem was resolved.

Competency 6

Graduates of Delaware County Community College should be able to analyze the impact of arts and humanities on life and discuss the part which diverse cultural ethnic groups play in the arts and humanities.
Therefore, graduates should be able to:
1. Identify those activities and products which constitute the artistic or humanistic aspects of a culture, including literary, fine, and performing arts.
2. Describe the elements that constitute artistic and humanistic activities that produce works of art.
3. Explain the impact of artistic and humanistic expressions on individuals.
4. Evaluate and analyze their own aesthetic responses to works of art and music.

Competency 7

Graduates of Delaware County Community College should have the skills necessary to analyze social, political, business and economic systems in order to function effectively within them.
Therefore, graduates should be able to:
1. Identify those activities and institutions which constitute the social aspects of a culture (e.g. geographic factors; governmental, business and economic systems; religious, marital and familial institutions; employment and civic, volunteer and recreational organizations).
2. Indicate the impact that ethnicity, social systems and institutions have on the individual.
3. Internalize their own personal place within their culture.
4. Identify the appropriate candidates and positions when using the democratic processes in political and social situations.
5. Integrate the developments of history into current social and economic processes and institutions.

Competency 8

Graduates of Delaware County Community College should be able to analyze the impact and apply the principles of science and technology so that they may make intelligent judgments.
Therefore, graduates should be able to:
1. Identify those activities and products which constitute the scientific and technological aspects of a culture.
2. Acknowledge that scientific concepts, laws or principles underlie technological activities and products.
3. Demonstrate that technology impacts on individuals, cultures, and the physical and ecological environment.
4. Possess scientific literacy in order to make intelligent judgments regarding individual lifestyles.

Competency 9

Graduates of Delaware County Community College should have the skills and experience necessary to make use of contemporary information systems in support of their personal life and career goals.
Therefore, graduates should be able to:
1. Use a Graphic User Interface (GUI) system for entering, manipulating, and retrieving application software.
2. Select and access appropriate software for word processing, spreadsheets, database management, presentations, and graphic functions.
3. Create, edit, print, and save documents using word processing software, spreadsheet software, presentation software, and graphic software.
4. Use the Internet to search for, retrieve, and evaluate information.

Competency 10

Graduates of Delaware County Community College should have a concept of diversity that enables them to appreciate individual and group differences and to recognize that appreciating these differences benefits everyone.
Therefore, graduates should be able to:
1. Consider and understand customs, viewpoints, and opinions generated by persons from backgrounds different than their own.
2. Analyze and evaluate the effectiveness of their own attitudes towards race, age, gender, ethnicity, socio-economic status, religion, physical and psychological abilities, sexual orientation and nationality in a world that requires collaboration and cooperation.
3. Use the tools of civil discourse to live comfortably in a world of "widely diverse, cultures, ideas, and viewpoints." *
4. Possess an awareness of the contributions of diverse peoples to the history of the United States and the world, and recognize that these contributions will continue to be worthy of scholarly and public recognition.
5. Realize that differences in humans are the result of cultural practices, " Quote by Sandra Day O’Connor in Grutter vs. Bollinger. 539 U.S. 306 (2003)

Competency 11

Graduates of Delaware County Community College should be able to satisfy the competencies in their chosen curricula.

Delaware County Community College
Academic Guarantee

Delaware County Community College believes that its instructional programs meet the needs of both graduates and employers by providing appropriate job entry skills and the competency levels required to transfer to baccalaureate institutions.

To assure this level of performance, the College allows our graduates the opportunity to enroll for up to fifteen (15) additional credit hours of course work without tuition charge if their skills or competencies do not meet stated expectations of employers or transfer baccalaureate institutions. This guarantee applies to graduates earning their degree on or after May 2001. Time constraints apply for both when retraining commences and is completed and is limited to course work regularly offered by Delaware County Community College for which the student earned a minimum grade of C.

A copy of the academic guarantee, along with appropriate documents required for retraining, is available from the Student Records Office.

DELAWARE COUNTY COMMUNITY COLLEGE
Delaware County Community College is committed to providing equal educational opportunity to all who can benefit. This open-door policy allows the College to admit any high school graduate or person who has passed the GED (high school equivalency) exam. Persons 19 or older who have not graduated from high school or passed the GED will be considered for admission on an individual basis. High school juniors and seniors may be approved for enrichment classes by the Admissions Office, in consultation with their principal or guidance counselor. All students seeking credit course work must file an application for admission.

The College strongly recommends that students apply as early as possible. Our admission procedure helps College counselors advise incoming students on the courses they select. Early applicants benefit both from placement testing and college planning sessions with the counseling staff.

How to Apply

An application for admission is available by calling the College at 610-359-5050, or check our website: www.dccc.edu.

If you wish to be enrolled in credit course work, please follow these steps:

1. Submit an admission application along with the non-refundable $25 processing fee:
   • Graduating high school seniors, those graduated within the last three years, those applying to nursing, respiratory therapy, surgical technology, municipal police training, and individuals seeking financial aid must submit an official transcript from their guidance office.
   • Transfer students desiring credit for prior course work must submit official transcripts from all postsecondary schools attended, and the petition for transfer of credit.
   • International students must submit official, certified, English-translated academic credentials and notarized affidavit of support verifying ability to meet expenses before an I-20 is issued.

2. Accepted students will receive information about our Placement Test, along with instructions about how to schedule this exam. Students with prior college credit in English and Mathematics may request a waiver of the Placement Test.

3. Participate in a College Planning Session to meet with a counselor, schedule your classes and learn more about Delaware County Community College.

If you graduated from high school or earned a GED and wish to enroll in credit courses on a part-time basis, you must complete steps 1 and 2 above. You are encouraged, but not required, to participate in a College Planning Session.

If you wish to re-enroll in courses on a part-time basis, you must complete steps 1 and 2 above. You are encouraged, but not required, to participate in a College Planning Session.

Visiting Students

If you attend a four-year college or university but wish to enroll at Delaware County Community College for course work to transfer back to your home institution, follow these easy steps:

1. Together with your completed application, submit a copy of your home institution transcript or a letter from your advisor verifying that you have met any prerequisites associated with our course(s) you wish to take.
   • Be sure to include a major code in the appropriate space on the application form. Most visiting students list "LA" for Liberal Arts.
   • Applications cannot be processed without a major code.

2. Include, with your application and transcript or letter, a note providing the specific course information for the classes you wish to enroll, including CRN (course reference #) SUBJ (subject code), CRS (credits), SEC (section), and TITLE (course title).

3. Either mail all of the above together to the Admissions Office or bring in person during business hours to our Main Campus, Southeast Center, Malin Road Center, Downingtown Campus, or Exton Center.

No High School Diploma or GED

If you have not graduated from high school, are 19 years of age or older, and wish to enroll in credit courses part time, you must:

1. Make an appointment to interview with a member of the admissions staff.
2. Complete a "non-high school graduate petition" for admission and submit it to the director of admissions.
3. Submit an admission application, along with the $25 nonrefundable processing fee.

Special Admissions Programs

Nursing, surgical technology, and respiratory therapy programs have special admission procedures. There is a special international student application for individuals who wish to attend on a student visa. Please contact the Admissions Office (610-359-5050) for a copy of the procedures and guidelines for these programs. Students interested in Municipal Police Training should contact the Malin Road Center (610-359-7386) for admission procedures. Students interested in the Plumbing Apprenticeship should call 610-356-4800 for admission procedures. Paramedic applicants must contact the Program Manager (610-723-4012) for special procedures. Perioperative Nursing applicants should call the Allied Health and Nursing Department 610-359-5353. Technical Studies applicants must contact the Assessment Center, 610-359-5322.
Enrollment Opportunities for High School Students

Delaware County Community College strongly encourages students to complete their high school program. There are, however, limited opportunities for academically strong high school juniors and seniors to enroll in course work at the College through Early Admission, Concurrent Enrollment and special Partnership Programs with their high schools. Students should discuss options with their high school counselor and make an appointment with the College’s Admissions Office (610-359-5050) for final approval by the following deadlines:

- July 1 for the fall semester;
- December 1 for the spring semester;
- April 15 for Summer I and Summer II.

Transferring to DCCC

Application Procedures

When transferring to Delaware County Community College from another college, you must submit an application form and a $25 non-refundable application fee. You must also ask the registrar at each institution where you have earned college credits to send an official transcript to our Records Office. A petition of transfer, available from the Assessment Center at the Main Campus (610-359-5322) or online at www.dccc.edu; or Learner Services in Exton (610-450-6510) or Downingtown (484-237-6210), or student services at Southeast Center (610-957-5700) must also be submitted for transfer credit evaluation.

- If you transfer in English Composition and College-level mathematics courses with grades of “C” or better at an accredited institution of higher learning, you may waive the requirement for placement testing.
- If you graduated from high school within three years of the date you plan to attend, an official high school transcript must also be submitted. Students seeking financial aid or those applying for admissions to nursing, respiratory therapy, surgical technology or municipal police training are also required to submit an official high school transcript.

Residency Requirements

For purposes of enrollment at Delaware County Community College, a resident is defined as a citizen or permanent resident of the United States. Residents of sponsoring school districts in Delaware County are eligible for the lower sponsoring tuition rate. Residency must be established at least three months prior to registration. If residency within the sponsoring district is for less than three months, the applicant will still be eligible for the lower tuition if it can be proven that residency was established for a reason other than attending the College.

- Applicants residing in a non-sponsoring district in Delaware County must pay the non-sponsoring tuition. Residents of other Pennsylvania counties also pay the non-sponsoring tuition. Out-of-state residents and international students must pay the out-of-state tuition rate. Non-immigrants also pay a per credit international student fee. Current tuition and fee information is available through the Admissions Office.

Academic Advisement for New Students

An important aspect of the admission process is the college planning and advisement session. Following a presentation on College services, curricula and policies, each new student meets with an advisor to discuss personal goals and educational plans so he or she may gain the most from College programs. The College is committed to providing students with the information needed for them to take responsibility for making good decisions to reach their life and educational goals.

- The student, after enrolling for the first semester, is assigned to an advisor. This advisor helps the student evaluate his/her progress at the College and provides information to help the student make appropriate course choices.
- For students with disabilities, early advisement is particularly important. Helpful hints, campus orientation and supplemental assistance are provided where appropriate for students with learning, physical, and/or psychological disabilities. Contact the Director of Special Needs Services at 610-325-2748.

Shared Programs with Philadelphia, Bucks, and Montgomery County Community Colleges

A Shared Program allows students from sponsoring school districts or counties to take courses that are not offered at their home institution but available at another local community college. Students who elect to enroll at participating community colleges must be authorized by the Director of Admissions and pay the host college’s sponsored student rate. Delaware County Community College students residing in sponsoring school districts may participate in the following shared program opportunities:

- **Offered at Bucks County Community College**
  - Fine Woodworking
  - Historic Preservation
  - Women’s Studies

- **Offered at Montgomery County Community College**
  - Dental Hygiene
  - Medical Lab Technology
  - Health & Fitness
  - Engineering Technology

- **Offered at Philadelphia Community College**
  - Dental Hygiene
  - Chemical Technology
  - Interpreter Education
  - Photographic Imaging

Students living in Bucks, Montgomery, or Philadelphia counties should consult their home institutions for eligible programs offered by Delaware County Community College. For further information, contact the Delaware County Community College Admissions Office at 610-350-5333.
Cooperative Education (Co-op) and Internships; College-Sponsored Experiential Learning (CSEL)

Cooperative Education (Co-op) and internships are part of the College’s Experiential Learning program, which integrates off-campus career learning experiences with classroom studies. These experiences are structured to explore career options and/or to prepare for a specific occupation. Students participating in co-op and internships gain college credit and are graded for their learning/work experience by appropriate faculty.

1. Co-op: Students are placed in a paid work/learning position that is directly related to their major field of study. They gain hands-on work experience and learn about related occupational positions in that field.

2. Internship: Students are placed in a non-paid work/learning experience designed to introduce them to several facets of a particular career in an actual work environment.

Co-op/internships can be done in selected majors in both degree and certificate programs. They may be taken for 1, 2, or 3 credits with a maximum of 6 credits per student. Course numbers for the majors participating in co-op/internship are: 199 and 198 for 3 credits, 194 for 2 credits, and 190 for one credit.

Eligibility requirements:
For associate degree programs: completion of a minimum or 21 credits with at least 9 in the major, or core discipline. In some majors more courses are required.
For certificate programs, completion of the required courses for the certificate.
The co-op/internship cannot be substituted for a required course.
The following are also required for all programs:
A grade point average of at least 2.5
A written faculty recommendation
A current resume
The Student Employment Services and Co-Op Center staff work with students in securing appropriate opportunities. However, placement is not guaranteed. For more information, call 610-359-5304.

Independent Study

Some programs offer an “independent” instructional mode for self-motivated, highly disciplined students who cannot pursue certain courses within the regular course framework. These courses include “distance learning” (courses aired on local television) and other independent study options designed by the individual instructor. Independent study and telecourses are listed in the course schedule published each semester with the designation “00.”

NOTE: Independent study should not be confused with individualized study. Individualized study courses are those in which students work primarily in the Learning Center rather than the classroom with various types of instructional support and individualized instruction. MAT 040, 060, 100, 120, 121, 140 and 141 are offered in Individualized instruction mode in the Math Science Learning Center (room 1180) on the Main Campus.
Delaware County Community College has committed to helping students achieve success in their college experience by educating students to take responsibility for their education and their lives. The Student Success areas continue to align their support services, programs and activities to provide students an active participant in their educational planning. The Student Success areas continue to align their support services, programs and activities to provide the resources and activities in and out of class to foster student engagement.

Office of Student Success and First Year Experiences

The Office of Student Success and First Year Experiences promotes “Student Success” and retention from the initial day of enrollment through student goal completion. The Office fulfills this goal via outreach, recognition and collaboration. The Office is staffed by the Director of First Year Experiences and three Perkins funded Retention Specialists who work with students in career programs. The staff participates in the College Planning and new student Orientation processes to provide information about programs, services, and resources that are designed to empower and facilitate the holistic development of students. Activities sponsored by this office help ensure a successful college transition for new students, contribute to student academic excellence, increase student involvement in co-curricular activities, and enhance student awareness, understanding, and utilization of the College’s resources and services. The Office also provides programs that will facilitate networking opportunities with successful professionals from diverse career fields and successful students from a wide array of majors. The staff makes appropriate campus referrals in order to alleviate non-academic attrition issues and ease the college and university transfer process for students. For more information, contact the Office of Student Success and First Year Experiences in rooms 2503 and 2504 in Founders Hall on the Marple Campus or call 610-359-5340.

Career and Counseling Services

The College maintains a comprehensive Career and Counseling Center. Services available to students include:
- Academic advising
- Short-term personal and career counseling
- Career related workshops
- An extensive library of career and educational resources

Counseling is offered for educational, career and personal development. Counselors can also assist with academic problems, selection of an academic major, and with personal concerns that may interfere with academic progress. Counseling is a walk-in service for students and an appointment is not always necessary. For more information, call 610-359-5324 at the Marple campus, 484-237-6210 for the Downingtown Campus, 610-450-6510 in Exton, 610-957-5720 at the Southeast Center, and 610-869-3305 at the Pennocks Bridge Campus.

Students with Disabilities

Delaware County Community College welcomes all qualified students with disabilities. Students with AD/HD, learning, physical and/or psychological disabilities seeking accommodations must provide current and comprehensive documentation and meet with the Director Disabilities Services, room 1320 in the Career & Counseling Center at the Main Campus. Services are also available at other campus locations. Students are responsible for picking up their accommodation letters every semester and communicating with their instructors. For more information about eligibility and documentation requirements and reasonable accommodations, please contact the Director at 610-325-2748.

The Assessment Center

The Assessment Center, located in Marple Campus room 2195 (610-359-5322), provides a variety of testing, assessment, academic advisement, and other services that support students’ progress toward their academic goals. Testing services include the College’s placement tests, SLEP Tests for English as a Second Language, College Level Examination Program (CLEP), American College Testing (ACT), Testing for entrance to the College’s Nursing Program, and General Educational Development (GED) exams. The Assessment Center is responsible for the transfer of credit from other colleges, credit for prior learning, change of curriculum and advisor assignment. For more information, visit the web site: www.dccc.edu, click on “Student Services,” then “Assessment Center.”

Transfer of Credit

A student who transfers to Delaware County Community College from another college can request the transfer of credits by completing a petition for transfer of credit. This form is available in the Assessment Center (Marple Campus room 2195) or at the Student Services or Learner Services Office at other campus locations. The form can also be downloaded from the website at http://www.dccc.edu/assessment/transfer. In addition to the petition, students must present an official transcript from their previous college to the Records Office. A maximum of 36 credits applicable to an associate degree major can be transferred from other colleges.

Credit for Prior Learning

Prior learning can be evaluated through the use of standardized tests or the submission of a portfolio containing certificates, transcripts and other information that document college-level learning. Examples of other learning opportunities include apprenticeships, military service, non-credit seminars, and workforce training. Credit for prior learning may accelerate degree completion. Prior Learning Assessment Advisors guide students in the identification and documentation of their learning as it relates to college courses and curricula in accordance with college policy. For more information, contact the Assessment Center (610-359-5322).

Advanced Placement

Delaware County Community College grants advanced placement college credit to qualified students. The maximum award is 16 credit hours towards an associate degree. Advanced placement allows students to fulfill the requirements for certain courses. Students must contact the College Board to have their official grade report sent directly to the Assessment Center. Credit is awarded to students earning an appropriate score on CEEB advanced placement examinations in the areas listed below, subject to instructor approval. For specific score requirements, contact the Assessment Center (610-359-5322).

American Government  History of Art
Biology  Microeconomics
Calculus  Music
Chemistry  Physics
Computer Science – AB  Psychology
English  Spanish
European History  Statistics
French  Studio Art
German  U.S. History

Delaware County Community College
Delaware County Community College also awards credit for successfully completed course work through partnership agreements with secondary schools and through the Intermediate Units in Delaware and Chester Counties. For more information, contact the Assessment Center (610-359-5322).

College Level Examination Program (CLEP)
It is possible for a student to earn up to 36 credits towards an associate degree through the College-Level Examination Program (CLEP). CLEP exams provide students with the opportunity to receive college credit by earning qualifying scores on any of the 34 CLEP examinations. For more information, contact the Assessment Center at 610-359-5322 or visit the College Board website at www.collegeboard.com/clep.

Act 101 Program
Act 101 is a state-funded program for educationally underprepared and economically disadvantaged Pennsylvania residents. During the summer, Act 101 offers an intensive seven-week program of free transitional courses that help to make the start of college life a smooth and meaningful experience. During the fall and spring semesters, the program offers professional counseling, tutoring (in reading, writing, mathematics and other subjects) and study skill workshops for program participants to promote student success. There are several ways to learn about Act 101: act101@dccc.edu, delaGATE, or call us directly at the Marple Campus at 610-359-5388.

Tutoring
The Act 101/Perkins Tutorial Lab supports, strengthens and motivates DCCC students to achieve academic success in the pursuit of their educational goals. This support service occurs through individualized and/or small group tutoring sessions in a variety of subjects. We serve all students with emphases on ESL, Essential, Developmental, Special Needs, Act 101 and students in career programs. The Tutorial Lab consists of two rooms, Room 1175 and Room 1243. Tutoring services are provided at the Tutorial Lab five days a week: four days from 8:00 a.m. – 9:00 p.m. and one day from 8:00 a.m. – 4:00 p.m. Students who need assistance with their courses may sign-up to receive tutoring on a weekly basis or can receive tutoring on a walk-in basis when tutors are available. To learn more about tutoring services at all campuses contact the Act 101/Perkins Tutorial Lab at 610-359-5009 or visit delaGATE.

SMARTHINKING
SMARTHINKING is an online tutoring service that provides students in traditional and distance learning courses with tutoring assistance anytime, anywhere. It is designed to assist students with writing across the curriculum. With SMARTHINKING, a student can schedule an appointment with an e-structor, connect and interact with a live tutor, submit an essay to the online writing lab, or submit a question and receive a reply from an e-structor. SMARTHINKING supports numerous subjects; for more information visit delaGATE or our website at www.tutor.dccc.edu.

The Writing Center
The Writing Center provides free professional tutorial services to help students improve their writing skills and obtain a level of confidence as learners of writing. The professional staff of tutors aims to help students work through all phases of their writing assignments. The “writing across the curriculum” approach helps students with outlining and organizing essays, writing business communications, preparing lab reports and compiling research. Tutoring sessions are individualized. The Writing Center hours are Monday through Thursday, 9:00 a.m. - 7:00 p.m. and Friday, 9:00 a.m. - 3:00 p.m. To schedule an appointment, visit the Writing Center in Room 4277. To learn more about the Writing Center’s services, visit delaGATE or the Writing Center website at www.dccc.edu/writingcenter.

Campus Life
The Campus Life office promotes community and student development by supporting an activities program that enriches the overall collegiate experience of students. Through the collaborative efforts of students, faculty and staff we engage students in programs that complement classroom experiences and provide opportunities for social interaction and the development of skills outside the classroom. The College supports a variety of clubs and organizations, intercollegiate athletics, sport clubs, intramural sports activities, and wellness and recreational activities, as well as co-curricular and cosponsored cultural programs, student leadership programs, community service programs, multicultural awareness programs, and other student development and engagement opportunities. The Campus Life office also coordinates the activities of the Student Government Association, the literary magazine, the radio station, and the theatre. Many opportunities exist for social interaction, intellectual and emotional growth, and the development of leadership and career-related skills through social, cultural and recreational activities and community service projects.

The campus life office, on the Marple Campus, (610-359-5341) can help you become engaged in a variety of activities. For more information, visit our web site: www.dccc.edu and click on “Student Services” then “Campus Life & Athletics.”

Wellness, Athletics and Recreation
The Office of Wellness, Athletics and Recreation provides students with the opportunity to participate in quality wellness and recreational activities. Through a college-wide wellness, athletics and recreation program including fitness, intercollegiate athletics, intramural sports, club sports, open recreation and special events the office provides a variety of activities for students, faculty and staff.

Health Center: The College Health Center (room 2260) on the Marple Campus (610-359-5140) responds to medical emergencies and minor illnesses on the Marple campus as well as to promote physical and mental well-being through health education programs. A registered nurse is on duty during both day and evening hours to assist students with medical needs or concerns. Problems needing referrals to outside sources – doctors, hospitals, clinics or other community resources – can be discussed and appropriate referrals can be made. Health Center services are free of charge for students and staff with the single exception of ambulance transport, if needed. Health Center information is available from our website: www.dccc.edu and click on “Student Services,” then “Health Center.”

Intercollegiate Athletics: The College offers opportunities for full- and part-time students to participate in athletic competition at the intercollegiate level. This competitive program allows student athletes to develop skills and team spirit and encourages them to achieve their highest potential. Intercollegiate teams for men include soccer, basketball and baseball; teams for women include volleyball, basketball and softball. Co-ed teams include golf and tennis. The College also sponsors a variety of sports clubs.

Student athletes must be covered by their own health insurance. In addition, student athletes must be registered as full-time students or have completed 30 or more credits at the College. For more information, contact the director of wellness, athletics and recreation at 610-359-5047 or visit our website: www.dccc.edu and click on “Student Services,” then “Campus Life & Athletics.”

Intramural/Recreational Sports and Wellness: The intramural/recreation sports program provides opportunities for students to participate in informal recreational activities and sports competition. The program offers local open gym nights and individual events, plus access to local recreational facilities and fitness centers at discounted prices. In the spring of 2009 the college will also open a brand new fitness center and aerobic studio in our S.T.E.M building.
For more information, visit the wellness, athletics and recreation office on the Marple Campus or call 610-359-5047. Or visit us on the web site: www.dccc.edu and click on “Student Services,” then “Campus Life & Athletics.”

Veterans Services
Delaware County Community College welcomes Veterans! In an effort to provide increased services and educational assistance to our U.S. Veterans, Delaware County Community College has established a Veterans Services Center to coordinate better its veterans outreach and educational support services. These services include information and referral services, assistance with financial aid application and veterans’ benefits, and evaluation of military transcripts for college credit. The office seeks to address the challenges returning veterans experience in seeking college level education and training. For information about Veterans benefits for financial aid, contact the financial aid office. For more information and referral to services for Veterans, please contact Christine Kohute at 610-359-5356.

International Student Services
Delaware County Community College welcomes students from around the world. Recognizing that studying and living in a foreign country is a unique experience, one that can be both exciting and challenging, the Office of International Student Services supports non-immigrant students through a variety of programs and services. These include orientation, academic advising, assistance with immigration matters, and help locating housing. Students on F-1 visa must study full-time in both the fall and spring semesters. Individuals on student visas are not eligible for Financial Aid. For more information about International Student Services, please visit us at the Marple Campus, Room 3555, or by telephone at 610-359-7322.

Office of Information Technology (OIT)
The mission of the Office of Information Technology is to provide technical innovation and quality support for computer, network and telecommunication services enabling the students, faculty and staff of Delaware County Community College to meet effectively the goals of a student success-oriented community. OIT works collaboratively and continuously with the campus community to evaluate emerging technologies and to determine how they may best be leveraged to achieve the College’s overall evolving objectives. OIT supports and enhances the College Academic areas by supporting systems, servers, desktops, audio/visual services, and phone systems in offices, classrooms, labs, and public areas. Further, OIT supports the College’s public and intranet websites, the delaGATE web portal, and provides all wired and wireless networking services intra/inter-campus and to the internet. Services offered for students:

  - **Network Account:** All admitted students receive a DCCCiD account. This account provides access systems at the College.
  
  - **Computer Lab:** Room 4256 is an open lab available for general student use. This lab has specific software installed that mirrors classroom software and provides printing capability. Room 4256 is open during the semester 8:00 a.m.-10:00 p.m. Monday – Thursday and 8:00 a.m.-4:00 p.m. Friday – Saturday. Summer hours are Monday – Thursday 8:00 a.m.-10:00 p.m. Each campus has a designated computer lab area available for use. Please check where these designated areas are in regards to each campus.
  
  - **Support Center:** The OIT Support Center is available for students to report any technical problems. This office will assist with any connectivity issues using student or college owned equipment. This office is located at the Marple Campus Room 4274, accessible at http://support.dccc.edu, or by phone at 610-359-5211.

  - **delaGATE:** The College portal is our central source of all information for students. The portal is also used for access to systems (student records, email, WebStudy, etc.)
  
  - **Email:** The College provides all admitted students with email, which is the preferred method for all College communications.

English as a Second Language
Delaware County Community College offers courses and services for students who need English for everyday life, employment, and study in U.S. colleges.

  - **Two types of classes are offered**
    
    - **Credit courses:** The college offers on three levels courses in grammar, writing, reading and speaking/listening (Elementary, Intermediate I and Intermediate II). Tutoring is required for ESL students in writing, reading and speaking/listening courses. This service supports classroom learning and student proficiency in English. The ESL credit program prepares students for introductory-level college courses and English 100, required for all degrees. ESL credits do not count toward the student’s degree but may be necessary for success. Permanent residents may study either full- or part-time and may be eligible for financial aid. Students apply through the Admissions Office and are enrolled in classes after sitting for an English as a Second Language (ESL) placement test.
    
    - **Non-credit courses:** These courses meet four hours each week. The focus is on English conversation for everyday life, with some reading and writing. Students can register for these courses through Community and Corporate Education.

The Library
The Delaware County Community College library on the Marple Campus offers a variety of resources and services to support the curriculum and information needs of the students, faculty, and staff. Located on the fourth floor of Founders Hall, the library collection contains over 50,000 items including books, videos, audio CDs, microforms, and other media. While the library subscribes to over 200 periodicals in hard copy, it also provides access to an additional 21,000+ periodicals through online database subscriptions. As well, students may use numerous computers and laptops in both the library and the library computer/group study and instruction labs for research, academic work, Internet access, and email. Users may access these materials through an online catalog linked to the library website at http://www.dccc.edu/library. Items not available in the library may be obtained through reciprocal borrowing with colleges in a tri-state area consortium or through a national inter-library loan program. As well, students at satellite campuses may utilize an Intra-Campus Borrowing program. Community members are welcome and may borrow for a fee. All library transactions require a valid DCCCiD which may be obtained at the library or any of the satellite-campus Learning Resource Centers. For more information about the library and its programs, please call 610-359-5326.

New Choices Career Development Program
New Choices is a FREE program providing assistance to unemployed individuals, single parents, displaced homemakers, and those in transition so that they may achieve their career, educational and personal goals. Small group workshops provide guidance to determine career interests, explore employment and training opportunities and prepare for success in today’s job market. Non-credit “computer basics” and math review classes are included. Classes are offered in January, March and September at the Marple Campus, the Southeast Center and Downingtown or Exton campuses. Evening classes are offered at the Marple campus. For additional information and to find out if you’re eligible, call 610-359-5232 or visit room 1301 at the Marple Campus.
KEYS (Keystone Education Yields Success)
The KEYS Program is a Department of Public Welfare sponsored program whose purpose is to provide special supports to TANF and Food Stamp students enrolled at Delaware County Community College. The program seeks to assist students in achieving their academic and career goals through mentoring, workshops, career guidance, tutoring and referrals to college and community resources.
KEYS also assists with tuition, books, transportation, childcare, car repair, purchase, license and registration fees. Special allowances through the Welfare Department can be supplemented by KEYS.
The program is open to all pre-60 month TANF recipients who are currently enrolled or plan to attend the College. The student must be in, or plan to enroll in, a career specific credit bearing certificate or associate’s degree program.
For more information, contact the KEYS Office at 610-957-5708.

WHEN ADDITIONAL ACADEMIC PREPARATION IS NEEDED:

Basic & Developmental Courses
All new students must take a test in English Composition, Reading, and Mathematics to determine appropriate course placement. The tests take approximately 2 hours and should be scheduled early in the enrollment process. If the test scores indicate the need for remediation in any of the three areas, then the student must successfully complete Basic and/or Developmental Courses before taking college-level English, Reading, Mathematics, and most other courses. Remediation is required before the completion of twelve college credits. No credit towards a degree results from Basic and Developmental Courses.

Developmental Mathematics With Supplemental Instruction
Supplemental Instruction (SI) is an academic enrichment program that is part of the Achieving the Dream initiative. Students attend a traditional MAT 060 classroom session for 3 hours, and then a required Supplemental Instruction session for 2 additional hours, for a total of 5 hours of instruction each week. SI sessions are led by a specially trained facilitator, the SI Leader. Although all students may register for MAT 060 with SI, the data shows that students who initially place into MAT 040 tend to be the students who most benefit from Supplemental Instruction.

THE LEARNING CENTERS

Marple Campus
At the DCCC Learning Centers, students receive academic support that enables them to be successful in their classes; this includes peer tutoring, testing services and access to numerous instructional resources. Instructional Assistants aid students in using technology efficiently and effectively, by providing an environment that engages the students. The General Learning Center also has two group study rooms for students to work on group projects and an open computer lab for students to work on academic work. These services are provided at two Main Campus locations in the Academic Building: The General Learning Center, 4th Floor (room 4260) and the Math and Science Learning Center, 1st Floor (room 1180). For information, call 610-325-3776.

Mathematics-Science Learning Center (Room 1180)
The Mathematics-Science Learning Center, located in Room 1180 in the Academic Building, is a place that offers academic assistance to students taking mathematics and science courses. These students can come here to receive free tutoring, to take approved make-up tests, and for special testing conditions. Students have access to computers with internet access and numerous mathematics and science tutorials and instructional programs. In addition, the Center hosts various individualized mathematics courses. In these courses students learn from the textbook, computer tutorials, and/or video clips that present each learning objective. They work at their own pace seeking help from the instructor as needed and taking tests when they are ready. For the Center’s hours call 610-359-5299. For other information call 610-359-5076.

Learning Resource Centers (LRCs) at Satellite Campuses
The Learning Resource Centers at off-campus sites offer access to general computing, study areas, tutoring, test proctoring services and audio-visual materials. The centers facilitate access to the Main Campus library, which includes borrowing materials, using the library’s online databases, coordinating Information Literacy sessions and generating college identification cards. The LRCs assist students with basic software applications, as well as providing support with the computer-based processes, such as accessing the college’s portal, delaGATE, Web Study, and student e-mail. The LRCs collaborate with Learner Services in assisting students with on-line registration and access to career information via the Internet. The LRCs may provide additional services, such as directing laptop loans, and facilitating course-related activities for Biology and other subjects.

For information please contact the Learning Resource Centers at the following sites:
Southeast Center- 610-957-5725
Downingtown- 484-237-6224
Exton- 610-450-6516
Pennocks Bridge- 610-869-5117
TUITION AND FEES

The following represents the tuition and fees for the 2009-2010 academic year. For future years, these amounts are subject to change based on the recommendations of the college’s Board of Trustees.

Tuition

<table>
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<tr>
<th>Per Credit Hour</th>
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<tbody>
<tr>
<td>Residents of sponsoring school districts</td>
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<tr>
<td>Pennsylvanians residing in an area that does not sponsor a community college</td>
</tr>
<tr>
<td>Non-Pennsylvania residents</td>
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THE COLLEGE RESERVES THE RIGHT TO CHANGE WITHOUT NOTICE THE TUITION AND FEES HEREIN STATED. (Tuition and fees do not include the cost of textbooks.)

Fees

Application Fee (non-refundable)
A $25 fee is charged when applying for enrollment in credit courses. The fee is a one-time charge and is in effect for your expected admission term or any time in the future.

Instructional Support Fee
Instructional support fees are charged to support the cost of technology and/or the cost of unusual staffing, supply or facility costs associated with the course. Credit courses are charged either $30.00, $35.00 or $40.00 per credit hour.

Plant Fee
A plant fee is charged to all students who do not reside in a school district that sponsors Delaware County Community College. The plant fee for non-sponsors who live in Pennsylvania is $3 per credit hour. Plant fee for out-of-state students is $6 per credit hour.

Student Activity Fee (non-refundable)
Per credit hour | $2

Records Processing Fee (non-refundable)
This fee is charged each semester to students to cover the cost of transcripts, enrollment/payment verification, early registration, drop/add processing and parking lot services.
- College credit courses | $20/term
- Non-credit courses | $5/term

Payment Plan Fee (non-refundable)
A $30 fee is charged for deferring payment of tuition and fees through the College’s Payment Plan. The payment plan is limited to credit courses and is not available to international students. Payments and due dates vary by term. Specific information about the plan may be obtained from the cashier at 610-359-5118.

Late Registration Fee (non-refundable)
A $20 fee may be charged to all students who register for courses after the announced registration dates or during the designated late registration period.

Check Service Fee
A $25 fee is charged each time a check is returned by the bank.

Commencement Fee (non-refundable)
A $25 fee is charged to all students who notify the College of their eligibility to graduate by filing the appropriate application. The fee covers the cost of completion credentials, rental of cap and gown, and other commencement expenses. This fee is assessed only once per degree.

Certificate of Competency Fee (non-refundable)
A $10 fee is charged to all students who anticipate completing Certificate of Competency program requirements and file the appropriate application form. The fee covers the cost of completion credentials. For concurrent certificates, additional forms and fees apply.

International Fee (non-refundable)
A $35 per credit hour International Fee is charged to students who are citizens of a country other than the United States and who enter on non-immigrant visas. This fee is used to support services to international students at DCCC.

Payment Policy
All tuition and fees are payable at time of registration unless the student participates in the College’s Tuition Payment Plan (see below). The College accepts American Express, VISA, MasterCard, Discover Card, cash, money orders and personal checks. The Marple, Downingtown, and Southeast locations have cashier services. Students will not receive grade reports or transcripts and will be barred from registration or commencement until financial obligations are settled to the satisfaction of College officials.

Tuition Payment Plan
Students in credit courses may take advantage of the tuition payment plan. This plan divides tuition into two, three, or four (depending on the date of registration) equal monthly payments rather than requiring one lump sum. A $30 non-refundable enrollment fee is charged for this plan. International students are not eligible for the tuition payment plan. Information about the plan is available from the cashier or by calling 610-359-5118.

Tuition and Fee Refund
To be eligible for any refund, the student must officially withdraw from the course or courses. Contact the Records Office for details. A refund will not be issued that is greater than 100% of tuition and refundable fees minus any non-refundable fees and required deposits. Students who receive federal financial aid and withdraw before completing 60% of the semester will have all or a portion of that aid returned to the federal fund before any refund is issued [see financial aid section of this catalog]. Refund of eligible payments will be made according to the following schedule:
How to Apply for Financial Aid

Students must reapply for each academic year. An academic year, for financial aid awarding, covers the calendar period July 1st through June 30th, and typically includes the terms Second Summer Session, Fall Semester, Spring Semester and First Summer Session.

Step 1: Apply for admission to Delaware County Community College. All Financial Aid recipients must be admitted to an approved academic program. All DCCC certificate and associate degree programs of 16 or more credits are approved for federal financial aid and all associate degree programs are approved for federal and Pennsylvania state aid. To apply, please go to the web site http://www.dccc.edu/admissions/ or call 610-359-5050.

Step 2: Most, eventually all, financial aid processing is being done electronically over the Internet. It is the fastest and most accurate way to apply for and receive your aid. Therefore we strongly recommend that you apply for a PIN at http://www.pin.ed.gov. The PIN will represent your signature on several important federal aid documents such as the Free Application for Federal Student Aid (FAFSA) and the Master Promissory Note (MPN) (more about those later). If you are a dependent student one of your parents should also apply for a PIN.

Step 3: Complete a Free Application for Federal Student Aid (FAFSA).

This is the basis for all need-based financial aid, federal and state. The most efficient way to complete this form is online. Please go to the web site http://www.fafsa.ed.gov and follow the instructions. The College will electronically receive your eligibility information in approximately two weeks after you submit your FAFSA.

Information from the paper version will electronically arrive at the College approximately two weeks after you submit your FAFSA. No federal or state aid can be credited to your account until a complete FAFSA is on file in our Financial Aid Office. Our SCHOOL CODE NUMBER is 007110.

Step 4: Do an online nationwide scholarship search at http://www.educationplanner.com or go to your local public library.

How Financial Aid is Awarded

The amount of financial assistance a student receives is determined by the student’s demonstrated need according to the following formula:

Cost of Education minus Expected Family Contribution (EFC) = Demonstrated Need

Cost of Education is calculated for the 2007-2008 academic year, two semesters (fall and spring), on the basis of full-time enrollment, according to the following table:

<table>
<thead>
<tr>
<th>Time of Withdrawal During Semester</th>
<th>% Rate for Refund</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the start of classes</td>
<td>100% (0% of class)</td>
</tr>
<tr>
<td>Before end of one week of classes</td>
<td>80% (7% of class)</td>
</tr>
<tr>
<td>Before end of two weeks of classes</td>
<td>60% (15% of class)</td>
</tr>
<tr>
<td>Before end of three weeks of classes</td>
<td>40% (20% of class)</td>
</tr>
</tbody>
</table>

*Refund for summer sessions, special sessions and all irregularly scheduled sessions and courses is determined by the percentage of class time elapsed.

For a student who must officially withdraw from the College after the first three weeks of classes because of a call to active duty in the armed services (appropriately certified) or because of a disabling injury or serious illness (either must be certified by a physician), credit for the full amount of tuition paid will be applied to future tuition charges. Federal “return of funds” policies still apply to all federal financial aid (see financial aid section of this catalog).

Refund or credit for the reasons of armed services or health will not be processed unless an official withdrawal was initiated at the time of discontinued attendance and notification and verification of the reason for withdrawal provided to the registrar within three weeks of the withdrawal date.

FINANCIAL AID

Federal Selective Service Requirement

All male students born after January 1, 1960 must register with the Selective Service System between their 18th and 26th birthdays or they will not be eligible to participate in any Federal Student Financial Aid programs. This requirement applies to all male U.S. citizens and to male non-citizens who enter the United States before their 26th birthday.

Important points:

- It is too late to register after your 26th birthday; therefore if you have not registered by that date you cannot receive Federal Student Aid.
- Male non-citizens who are not registered with the Selective Service System must prove that they did not enter the United States until after their 26th birthday.
- Males who are currently serving in the armed services and are on active duty (not members of the Reserves or the National Guard) are exempt from this requirement. (See below)
- Veterans of the armed services are not exempt from this requirement and must have registered with the Selective Service System between their 18th and 26th birthdays.

Cost of Education minus Expected Family Contribution (EFC) = Demonstrated Need

Cost of Education is calculated for the 2007-2008 academic year, two semesters (fall and spring), on the basis of full-time enrollment, according to the following table:
A student's aggregate need-based aid cannot exceed "Demonstrated Need." If a student does not enroll full-time, enrolls in fewer than or more than two semesters or enrolls in ineligible courses, the Cost of Education will be calculated differently. If you have any questions, please contact the Financial Aid Office at finaid@dccc.edu.

**The U.S. Department of Education (USDE) determines whether a student is dependent or independent based on information you submitted on your Free Application for Federal Student Aid (FAFSA). The Registrar's Office of the College determines your residency status.**

After financial aid eligibility is determined and an aid package is developed, the Financial Aid Office will mail an Award Letter to the student. The award will also be available at http://www.dccc.edu/studentrecords

**Statement of Satisfactory Academic Progress Policy for DCCC and Federal Assistance Programs**

USDE regulations require that all students meet minimal quantitative and qualitative standards of academic progress toward a degree in order to continue receiving federal financial assistance. Federal SFA funds are the Federal Pell Grant, Federal SEOG Program, Federal Work/Study Program, and the Stafford Loan Program. The College has adopted the following standards of satisfactory academic progress to comply with this federal requirement. These standards are for financial aid purposes only and neither replace nor override any of the College's other academic policies.

1. A student is required to complete, with a passing grade, 67% of all credits attempted at Delaware County Community College. This quantitative standard is calculated as "number of credits successfully completed" divided by "number of credits attempted". Successful completion of a course is indicated by a grade of A, B, C, D, or P or HP; unsuccessful completion is indicated by a grade of E, F, W, IN, NP, IP or NR. Audited classes are not considered nor are courses completed at another institution and transferred into Delaware County Community College.

2. A student must attain a specific cumulative grade point average upon completion of a specific number of credits. This qualitative requirement is set as follows:
   - 15 credits earned or below – 1.50 minimum Grade Point Average (GPA)
   - between 16 credits and 30 credits earned – 1.75 minimum GPA
   - between 31 credits and 45 credits earned – 1.90 minimum GPA
   - between 46 credits and 90 credits earned – 2.00 minimum GPA

3. Federal regulations also state that a student is not eligible to receive federal financial assistance after having attempted 150% of the required credits for a degree. A typical Associate Degree at Delaware County Community College requires completing approximately 60 credits; therefore, a student cannot receive financial assistance after having attempted 90 credits, regardless of the student's completion rate (number 1 above) or grade point average.

**Right to Appeal**

A student who has been determined ineligible to receive federal financial assistance for failure to meet the above standards of satisfactory academic progress may submit an appeal in writing to the Financial Aid Office. Appeals will be granted only where mitigating circumstances exist such as if the student became very ill, was severely injured or suffered the death of a parent, child or spouse. A waiver may also be granted if there has been a lapse of four years or more between a prior enrollment at the College and the term for which financial aid is sought. Appeals, for any reason, can only be considered if they are received in the Financial Aid Office one month prior to enrollment or within one month after the time that the student is sent notification of failure to make satisfactory academic progress.

**Minimal Satisfactory Academic Progress Policy for Pennsylvania State Grant**

Delaware County Community College is required to ensure that a student receiving a Pennsylvania State Grant has met the Pennsylvania Higher Education Assistance Agency's (PHEAA) satisfactory academic progress requirement. This requirement applies to students who have received a State Grant in a prior academic year. These students must successfully complete the minimum number of credits appropriate to their enrollment status during terms for which they received a State Grant. The Financial Aid Office must use PHEAA's award counter table to determine the minimum number of credits a student must pass in each semester in order to continue to receive a State Grant.

If the student received the prior State Grant at a different institution, the College must request a copy of the academic transcript from the student. The Financial Aid Office will review the academic transcript to confirm PHEAA's academic progress requirement was met at the prior institution before applying any State Grant funds. Where a prior State Grant was received more than 10 years ago, the College is not required to perform the academic progress test.

At Delaware County Community College, academic progress for the State Grant is reviewed at the end of the Spring term for the preceding 12-month period to include Summer, Fall, and Spring. This method is applied consistently for all students. Once academic progress is confirmed, the College does not review progress further until the next academic year.

To comply with PHEAA's policy, it is possible some of the prior credits completed would not be included when performing the academic progress test. Such credits could include:

- ∑ Repeat coursework where the student received a passing grade previously. This course can only be counted once.
- ∑ Remedial / developmental / ESL coursework will only be counted where a remedial exception was granted in the prior term and only those courses counted toward the prior enrollment status are included in the count.
- ∑ Only those courses that meet PHEAA's 50% classroom instruction rule are included in the count toward credits successfully completed.

To receive a PA State Grant beyond the 2.00 counter requires special circumstances defined by the Pennsylvania Higher Education Assistance Agency. Contact the Financial Aid Office at Delaware County Community College for details if more than four full-time semesters or eight part-time semesters is needed to complete the associate degree.

If the Financial Aid Office determines that a student has made Satisfactory Academic Progress or has not received prior grants, we may still have to make adjustments to the PA State Grant. The information used to determine eligibility must agree with actual enrollment i.e. residency status (sponsoring or non-sponsoring) and enrollment status (full-time, 12 or more credits per semester or part-time, between 6 and 11 credits per semester).
Refund to Federal Programs When the Student Withdraws

The Higher Education Amendments of 1998, Public Law 105-244 creates a formula to determine the amount of Federal Student Financial Aid (FSA) Funds a student has earned when he or she completely ceases attendance without finishing the payment period (semester or summer term) for which the funds were awarded. Federal FSA funds are: the Federal Pell Grant, Federal SEOG Program, Academic Competitiveness Grant (ACG), Federal Work/Study Program, and the Stafford Loan Program. Up through the 60% point in each payment period, this formula (see “amount of federal student assistance earned” below) is used to determine how much federal financial assistance the student has earned at the time of withdrawal. After the 60% point in the payment period, a student is considered to have earned 100% of the federal financial aid program funds.

This schedule applies only to the amount of FSA funds that a student, who withdraws from all courses they enrolled in during any payment period, may keep. The schedule does not apply to how much the College may charge for withdrawal.

The student’s withdrawal date shall be:
• The date the student began the College’s official withdrawal process, or
• The date the College registrar received official notification from the student of her/his intent to withdraw. This can be in the form of a letter from the student, or another individual with written authorization from the student.

The calculation of amount of federal FSA assistance earned shall be:
• If the student’s withdrawal date is on or before the 60% point of the payment period for which financial assistance was awarded, the percentage of total FSA earned is equal to the percentage of the payment period that was completed.
• If the day the student’s withdrawal date occurs after the student has completed 60% of the payment period, the percentage earned is 100%.

The calculation of the percentage of the payment period completed shall be:
• Total number of calendar days in the payment period for which the assistance is awarded divided into the number of calendar days completed as of the day the student withdrew.

The calculation to determine who pays the repayment:
• If the student has not received a refund of FSA funds, the College repays the entire amount due.
• If the student has received FSA funds, the College must repay the lesser of:
  1. The full amount of the unearned funds or 2. The total institutional charges multiplied by the “unearned percentage.”

The student pays the remainder.

Order of the return of FSA funds:
• Unsubsidized Stafford Loan
• Subsidized Stafford Loan
• Federal Pell Grant
• Academic Competitiveness Grant
• Federal Supplemental Educational Opportunity Grant

Leave of Absence Policy

Delaware County Community College does not permit students to take an extended leave of absence during a semester. If a student experiences a sudden, unforeseen circumstance making it temporarily impossible for her/him to continue her/his studies during a particular semester, that student must formally withdraw from the College for that semester through the Student Records Office. If the student is unable to come to the Student Records Office, the student’s parent or spouse may initiate the withdrawal with written authorization from the student.

Timing of the withdrawal will affect the amount of charges/refund accessed by the College and may affect the amount of federal Title IV financial aid that the student will be able to retain. See the section of the college catalog titled “Tuition and Fees” for further details.

Financial Aid Programs

NEED BASED PROGRAMS

Federal Pell Grant

A Federal Pell Grant does not have to be repaid. Pell Grants are awarded only to undergraduate students who have not earned a bachelor’s degree. To determine if a student is eligible financially, the U.S. Department of Education uses a standard formula, established by Congress, to evaluate the information you report on your FAFSA. The formula produces an Expected Family Contribution (EFC) number. The Student Aid Report (SAR) contains this number, in the upper right portion of page 1, and will tell you if you’re eligible for a Pell Grant; Delaware County Community College will tell you the amount you are eligible for on your award notification. Grants for the 2007-2008 award year (July 1, 2007 to June 30, 2008) will be between $200 and $4,050. You can receive only one Pell Grant in an award year. How much you get will depend on your EFC, on your cost of attendance, whether you’re a full-time or part-time student, and whether you attend school for a full academic year or less. You may not receive Pell Grant funds from more than one school at a time. The College will credit the Pell Grant funds to your tuition account. Your Award Letter will tell you when your grant will be paid and how much your award will be. If you’re otherwise eligible, you may receive a Pell Grant by enrolling less than half-time (3 to 5 credits); however, you won’t receive as much as if you were enrolled full time.

Federal SEOG Program

A Federal Supplemental Educational Opportunity Grant (FSEOG) is for undergraduates with exceptional financial need—that is, students with the highest demonstrated need—and gives priority to students who receive Federal Pell Grants. An FSEOG doesn’t have to be paid back. The U.S. Department of Education guarantees that each participating school will receive enough money to pay the Federal Pell Grants of its eligible students. There’s no guarantee every eligible student will be able to receive a FSEOG; students at the College may be awarded an FSEOG based on the availability of funds. FSEOG awards will be between $100 and $500 a year, depending on when you apply, your level of need, the availability of funds and our awarding policies. When all the conditions of the award are met, the Financial Aid Office will credit your account.

Federal Work/Study Program

The Federal Work-Study Program provides jobs for students with financial need, allowing them to earn money to help pay education expenses. The program encourages community service work and work related to your course of study. Your Federal Work-Study wages will be at least the current federal minimum wage, but in most jobs at the College it will be higher. Your total Federal Work-Study award depends on when you apply, your level of need, and the funding level at the College. Student/Workers will be paid by the hour on a bi-weekly basis. Your Federal Work/Study job may be on campus or off campus. If you work off campus, your employer will usually be a private nonprofit organization or a public agency, and the work performed must be in the public interest. The amount you earn can’t exceed your total Federal Work-Study award. When accepting work hours you should consider your class schedule and your academic progress as well as your financial need.
PHEAA State Grant

The State Grant Program provides grants to eligible Pennsylvania residents who are in need of financial aid to attend a PHEAA-approved post-secondary school as undergraduate students. Those who apply in 2007-2008 may receive up to $3,300 as a full-time student at the College. Students enrolled on a half-time basis (at least six credits or its equivalent) receive up to $1,650. Students enrolled in summer study may also be eligible for a summer State Grant, provided they are registered in both Summer I and II sessions. Major eligibility requirements are:

- Meet financial need criteria.
- Be enrolled at least half-time in a PHEAA-approved undergraduate two-year program of study leading to an Associate Degree.
- Be a high school graduate or the recipient of a GED.
- Demonstrate academic progress for continued aid.
- Be a Pennsylvania resident.

Application procedure & deadlines:
To be eligible a student must file a Free Application for Federal Student Aid (FAFSA) by the appropriate date:
- May 1st immediately preceding the academic year for all renewal applicants and new applicants who plan to enroll in an undergraduate Associate Degree, college transfer program.
- August 1st immediately preceding the academic year if you are a first-time applicant who plans to enroll in an Associate in Applied Science, terminal non-transferable, program.

All students are urged to apply even if the deadlines have passed, since late applications are considered if funds permit.

For more information about the Pennsylvania State Grant go to the Internet site http://www.pheaa.org/index.html

Pennsylvania New Economy Technology Scholarship Program

Technology Scholarships provide up to $1,000 per year, based on total educational costs, to Pennsylvania high school graduates who don’t seek a four-year education but do want to succeed in a technology-based economy. Students enrolled part-time are eligible to be considered for a scholarship that covers up to 20 percent of their tuition and mandatory fees. To qualify, a student must:

1. Be a resident of the Commonwealth of Pennsylvania;
2. Be a high school graduate;
3. Be enrolled in an approved science or technology program at an approved Pennsylvania community college;
4. Maintain at least a 3.0 cumulative grade point average;
5. Begin employment in the state within one year after completion of studies, one year for each year that the scholarship was awarded;
6. Apply for a Federal Pell Grant and a Pennsylvania State Grant.

For more information about the Pennsylvania New Economy Technology Scholarship go to the Internet site http://www.pheaa.org/students/s2.shtml

Federal Stafford Loan Program

Federal Stafford Loans are long-term, low-interest loans made to a student by a private lending institution such as a bank. To be eligible for a Stafford Loan a student must:

- Complete a Free Application for Federal Student Aid for the appropriate academic year.
- Be a US citizen or eligible non-citizen.
- Be accepted for admissions to DCCC in a federally approved program and, if enrolled, be making satisfactory academic progress.
- Be enrolled or planning to enroll as at least a half-time student (six credits or more) in each term for which loan funds are to be awarded.

**Stafford Loan Application Procedure**

The student must complete the FAFSA and a Stafford Loan Instruction Sheet, available at the College Financial Aid website. Our Financial Aid Office will then electronically certify the loan with the Pennsylvania Higher Education Assistance Agency (PHEAA). They will send a form called the Master Promissory Note (MPN) that must be signed and returned to PHEAA. When PHEAA receives the MPN they will instruct the student's bank to send a check to DCCC made jointly payable to the College and to the student.

**Definition of an Academic Year for Federal Student Financial Aid**

For federal Financial Aid purposes, the College defines its Academic Year as at least 24 credit hours and 30 weeks of instruction time. If you are enrolled in a Certificate Program of less than 24 credits, Federal Regulations require that the College’s Financial Aid Office pro-rate the freshman annual loan limit based on the number of credits in the program of study. Note: regardless of the length of time it takes you to complete your program of study, you can never exceed this pro-rated annual loan limit.

**Stafford Loan Disbursement**

All Federal Stafford Loans are disbursed in two nearly equal disbursements during a loan period. For the traditional academic year, the Fall Semester and Spring Semester, the most common borrowing period, the first disbursement will occur during the Fall semester and the second disbursement will occur during the Spring semester. For a single semester or term, Summer II, Fall, Spring or Summer I, the first disbursement will occur at the beginning of the semester and the second disbursement will occur at the half-way point of the semester.

Our Cashier’s Office will be notified that the loan is in process and they will wait for payment for tuition and fees (up to the amount of the loan) until your loan is disbursed.

These disbursements are sent to our Cashier’s Office by the Pennsylvania Higher Education Assistance Agency by Electronic Fund Transfer (EFT). When your funds arrive we will send you a ‘Notice of Disbursement’ postcard or email. This notice directs you to the Student Records Access on our website, where you can see what type of loan was credited to your account and what amount is being disbursed. **YOU MAY CANCEL THE LOAN WITHIN TEN DAYS OF THE DATE OF THIS DISBURSEMENT.** To cancel you must submit written notification to the FAO on the Main Campus in Media that you want to cancel your loan.

If the disbursement exceeds the charges on your account the Cashier will make a check payable to you and available in the Cashier’s Office fourteen days after your account is credited, or fourteen days after the beginning of the semester, whichever is greater.

These processes apply whether the loan is subsidized or unsubsidized. Disbursement dates may be affected by the time that the application process is completed.

**Subsidized Stafford Loan vs. Unsubsidized Stafford Loan**

Eligibility for a Subsidized Stafford Loan is calculated as:

Cost of Education minus EFC minus other aid = eligibility.

If the student has eligibility the federal government will pay the interest on their Stafford Loan while they are in school as at least a half-time student. For the Unsubsidized Stafford Loan the calculation is:

Cost of Education minus other aid = eligibility.

The EFC is not part of the calculation (although the student must still submit the FAFSA form). With the unsubsidized Stafford Loan the student is expected to pay the interest while the student is enrolled.

With the Master Promissory Note the student will receive a form entitled...
Instructions and Notices that will describe the differences in the two loan forms, the repayment options and deferral processes in greater detail. Please read it carefully.

**NON-NEED BASED PROGRAMS**

**Federal PLUS Loan**

The PLUS loan is a loan to the parent(s) of a student; it is not the student’s loan as are the two Stafford Loans mentioned above. Parents who do not have a bad credit history can borrow a PLUS Loan to pay the education expenses of a child who is a dependent student enrolled at least half time in an eligible program at Delaware County Community College. Parents will fill out an application, which is available in the Financial Aid Office 610-359-5330. To be eligible to receive a PLUS Loan, parents generally will be required to pass a credit check. Parents cannot be turned down for having no credit history-only for having an adverse one. Parents who don't pass the credit check might still be able to receive a loan if someone, such as a relative or friend who is able to pass the credit check, agrees to endorse the loan. An endorser promises to repay the loan if your parents fail to do so. Parents might also qualify for a loan even if they don't pass the credit check as long as they can demonstrate that extenuating circumstances exist. Students and parents must also meet other general eligibility requirements for federal student financial aid. The yearly limit on a PLUS Loan is equal to a student's cost of attendance minus any other financial aid. The College will receive the money in at least two installments. No one payment may exceed half of the loan amount. Parents will be required to endorse a disbursement check and send it back to the College. The college will then apply the money to your tuition, fees and other charges. If any loan money remains, parents will receive the amount as a check. The interest rate is variable (adjusted annually), but it will never exceed 9%. Parents will be notified of interest rate changes throughout the life of their loan. Interest is charged on the loan from the date the first disbursement is made until the loan is paid off. Your bank will tell you a loan repayment schedule before the loan process is completed. There is no grace period for these loans. Interest begins to accumulate at the time the first disbursement is made, and parents will begin repaying both principal and interest while their student is in school.


**Other Financial Aid Programs**

**Veterans Benefits**

Delaware County Community College is approved for veteran's benefits. Veterans, dependents of veterans who died of service-related injuries and children of veterans with disabilities that are total, permanent and service related may all be eligible to receive benefits. Students may inquire about their eligibility by calling the Veterans Administration at 888-442-4551 or by going to the Internet site http://www.gibill.va.gov/

**Pennsylvania Army National Guard**

If you join the Pennsylvania Army National Guard, they will pay all tuition and fees at Delaware County Community College. More information go to the Internet site http://www.paguard.com/ or call 717-861-8626.

**Office of Vocational Rehabilitation**

This agency provides educational assistance to qualified disabled residents of Pennsylvania. For information call 610-525-1810, (610-525-5835 TTY), or visit the Internet site http://www.dli.state.pa.us/

**AmeriCorps**

AmeriCorps members train volunteers, tutor and mentor at-risk youth, build housing, clean up rivers and streams, help seniors live independently, provide emergency and long-term assistance to victims of natural disasters, and meet other community needs. After you successfully complete a year of AmeriCorps service, you will be eligible for an education award of $4,725. If you serve part-time, you'll be eligible for a portion of that amount. If you already have student loans, you can use your education award to help pay them off. For more information call 215-597-2715 or visit the Internet site http://americorps.org/

**Scholarships**

There are a number of privately funded scholarships available to our students. Each scholarship has its own requirements and criteria for eligibility. More information can be obtained through the DCCC Educational Foundation or the Financial Aid Office. Examples of scholarships include:

- ACCA Endowed Scholarship
- Ad 101 Scholarship
- John Russell Agar Nursing Scholarship
- Alpha Delta Kappa Scholarship
- American Association of University Women Scholarship
- American Foodservice Corporation Endowed Scholarship
- American Legion Bernhard F. Schlegel Scholarship
- David J. Andrien Memorial Scholarship
- David Baldwin Memorial Endowed Scholarship
- Marc A. Bender Endowed Scholarship
- Boeing Scholarship Program
- Born Choosers Scholarship
- Bravo Scholarship
- Bridge of Hope Scholarship
- Denis A. Cannon Scholarship
- Cannon Mini Self Storage Scholarship
- Dr. John T. Carroll Memorial Endowed Scholarship
- Chester County Community Foundation Scholarship
- Chester Pike Rotary Club Endowed Scholarship
- Kevin T. Coleman Memorial Endowed Scholarship
- Madalene Hayes Conner Scholarship
- ConocoPhillips Company Scholarships
- Charles W. Crist Memorial Endowed Scholarship
- Cumberland Insurance Group Scholarship
- Anthony D'Angelo Business Society Scholarship
- David's Bridal Scholarship
- Richard D. DeCosmo Presidential Scholarship
- DCCC Alumni Legacy Scholarship
- DCCC Educational Foundation Scholarship
- DCCC Memorial Scholarship
- DCCC Psychology Faculty Scholarship
- DCCC Student Government Association Scholarship
- Delaware County Tavern Association Endowed Scholarship
- Delaware County Local Emergency Planning Committee Scholarship
- Delaware County Sheriff's Scholarship
- Delaware Valley Industrial Resource Center Scholarship
- Maryann DiGiandomenico Memorial Scholarship Fund
- Donnelly-Barnes Scholarship
- Drexelbrook Community Scholarship
- Eastern Deko Business and Professional Women's Club Scholarship
- Eganey Kaufman Memorial Scholarship
- Dessa Ewing and Harry Le Fever Memorial Scholarship
- Exelon Scholars Program
- J.R. Finio & Sons Endowed Scholarship
- Dolores Finnigan Memorial Scholarship
- Flora Music Scholarship
- The Jonathan Phillip Ford Memorial Scholarship
- Teresa K. Freda Endowed Scholarship
- D. Barry Gibbons Scholarship
- The Gureghian Family Scholarship
- George and Anna Hall Memorial Scholarship

**FINANCIAL AID**

Delaware Community College
**Lifetime Learning Credit**

The Lifetime Learning Credit is another tax credit for higher education. The amount of the credit is equal to 20% of the first $10,000 of qualified tuition and related expenses paid by the taxpayer. This tax credit is being phased in gradually. For tax years beginning before January 1, 2003, the tax credit is limited to the first $5,000 of qualified tuition and related expenses. Thus the credit is up to $1,000 through the year 2002 and $2,000 thereafter. The Lifetime Learning credit does not vary according to the number of students. This is in contrast with the HOPE tax credit, which is based on the number of eligible students in the household. This means that if you have multiple children in school at the same time and your tuition bills total more than $10,000, you only get the credit for the first $10,000 paid. You don’t get another credit for each additional child. The credit is relative to the total amount of tuition paid, irrespective of the number of children in school.

Qualified tuition and related expenses includes expenses for any course of instruction at an eligible educational institution to acquire or improve job skills. This means that the credit may be used for part-time study, not just students enrolled half-time. Unlike the HOPE tax credit, the Lifetime Learning tax credit may be claimed for an unlimited number of years.

For more information about these tax credits please go to http://www.ed.gov/inits/HOPE/

**Flexible Payment Options**

Delaware County Community College accepts VISA, MasterCard, Discover, cash, money orders and personal checks for payment of tuition and fees.

**Tuition Payment Plan**

The College offers a tuition payment plan for students enrolled in credit courses, regardless of the number of credits. The date the student registers for classes determine how many payments can be arranged. A maximum of four equal monthly payments is possible. A non-refundable $30 enrollment fee will be charged to payment plan participants. For specific due dates for a particular semester contact the Cashier’s Office at 610-359-5118.

International students and students enrolled in non-credit courses are not eligible for the tuition payment plan.

**Financial Aid Resources on the Internet**

- http://www.finaid.org
  - The Smart Student’s Guide to Financial Aid
  - A financial aid overview.
- http://www.students.gov
  - The Student Gateway to the US Government
  - Federal student aid information and more.
- http://www.pheaa.org
  - Pennsylvania Higher Education Assistance Agency
  - Financial Assistance for Pennsylvania Residents.

**Frequently Requested Telephone Numbers**

- 1-800-4-FED-AID (1-800-433-3243)
- 1-800-692-7392
- 1-800-692-7435

**Tax Credits for Higher Education Expenses**

**Hope Scholarship**

A Hope Scholarship Credit is not a scholarship. It is a credit against federal taxes, which may be claimed for the tuition and related expenses of each student in the taxpayer’s family (i.e., taxpayer, taxpayer’s spouse, or an eligible dependent). These students must be enrolled at least half-time in one of the first two years of post-secondary education, in a program leading to a degree, certificate, or other recognized educational credential. The amount that may be claimed is generally equal to 100% of the first $1000 of out-of-pocket expenses plus 50% of the next $1000 of out-of-pocket expenses, up to a maximum of $1500 per year per student.
GRADING SYSTEM

Letter grades will be distributed at the end of each semester. Student achievement is measured by the student’s grade point average. The GPA is an indication of the quality of the work a student has done at the College in one semester.

The following letter grades are included in the computation of a student’s grade point average (GPA).

<table>
<thead>
<tr>
<th>Letter Grades</th>
<th>Meaning</th>
<th>Grade Points Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Above Average</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>Below Average</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Failing</td>
<td>0</td>
</tr>
</tbody>
</table>

Letter grades that do not count in computation of a student’s GPA:

- AU . . . . . Audit: The only grade given when a course is audited and carries no credit.
- CP . . . . . Collegiate Partnership: Credit awarded for courses certified by DCCC faculty for which a grade equivalent of “C” or better was earned.
- IN . . . . . Incomplete: This grade is given when extenuating circumstances prevent the student from completing the course work during the regular session. The incomplete work must be completed before the end of the next College session. Do not re-register for the class. “Incomplete” changes to “P” if not completed by the next semester.
- HP . . . . . High Pass: The student has completed the course requirements and has demonstrated excellence in meeting the course competencies.
- P . . . . . . Pass: The student has completed the course requirements and has demonstrated proficiency in meeting the course competencies.
- NP . . . . . No Pass: The student has not completed the course requirements and/or has not demonstrated proficiency in meeting course competencies.

**Note:** Instructors of transitional and developmental courses will define in their course syllabi the grading criteria that constitute an HP, P, or NP.

Letter grades: HP, P, IP, NP, W, IN and CR.

Developmental and transitional courses will be awarded the following grades: HP, P, IP, NP, W, IN and CR.

These grades do not count in the computation of a student’s GPA.

**Grade Point Average**

A student’s grade point average is calculated as follows:

1. Determine the quality points earned in each course: multiply the number of points by the number of credits given for each course.
2. Divide the sum of the grade points by the total number of graded or GPA credit hours.

The result is the grade point average.

**Auditing a Course**

Persons eligible to enroll in a course for credit may also enroll in that course as auditors, if they receive the approval of the appropriate dean. Auditors pay the regular tuition and fee charge applicable to the credit students. They are expected to attend all lecture and laboratory classes but are not required to take examinations or submit term papers. Students auditing a course will receive only the grade of “AU” and no credit. The Petition to Audit must be submitted prior to the end of the first week of class.

**Academic Bankruptcy**

A student may declare academic bankruptcy for a period in his/her past that does not reflect his/her current capability for performance.

Any returning student who has not attended Delaware County Community College for two consecutive years may request that “F” and/or “D” grades of courses prior to readmission be excluded from the grade point average, although the courses and grades remain in the transcript. A written request to the Provost must specify that the student does not wish any of the excluded grades to be used in any way toward fulfilling degree requirements. The College, in return for this declaration of academic bankruptcy, will exclude grades and courses as requested. This request will be considered only after the returning student completes at least 24 credits of graded course work with a GPA of 2.7 or above.

Academic bankruptcy may be approved only once for any individual student and is irrevocable.

**Delaware County Community College Policy on Student Confidentiality**

As outlined in the Family Education Rights and Privacy Act (FERPA), a student has the right to have his or her educational records remain confidential. FERPA affords students certain rights with respect to their educational records. They are:

1. The right to inspect and review the student’s education records within 45 days of the day the College receives request for access.

   Students must submit to the Student Records Office a written request specifying the record(s) they want to inspect. The Registrar will make arrangements for access and notify the student of the time and place to inspect the record. If the Student Records Office does not maintain the records the student requested, the Registrar will advise the student of the correct official to contact.

2. The right to request the amendment of education records that students believe are inaccurate.
Students may ask the College to amend a record they believe is inaccurate or misleading. They should write to the College official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate.

FERPA was not intended to provide a process to question substantive judgments, which are properly recorded. The rights of challenge do not apply, for example, to an argument that a student deserved a higher grade in a course if the grade recorded is the grade submitted by the faculty member. See the College catalog for policies applying to grade appeals.

If the College decides not to amend the record as requested by the student, the College will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Students who wish to appeal the decision should direct their request for an appeal to the Office of the Associate Vice President for Enrollment Management. The College will provide the student with specific information regarding the hearing procedures upon the receipt of a request for a hearing.

3. The right to consent to disclosures of personally identifiable information contained in a student’s education records, except to the extent that FERPA authorizes disclosure without consent.

One exception that permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the College in an administrative, supervisory, academic, research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the College has contracted (such as an attorney, auditor, collection agent, insurance agent, or official of the National Student Loan Clearing House); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks.

A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

The College may disclose education records without consent in certain other circumstances:

- to comply with a court order or certain types of subpoenas
- to appropriate parties in a health or safety emergency
- to officials of another school, upon written request, in which a student seeks or intends to enroll
- in connection with a student’s request for or receipt of financial aid, as necessary, to determine the eligibility, amount or conditions of the financial aid, or to enforce the terms and conditions of the aid
- to certain officials of the U.S. Department of Education, the Comptroller general, to state and local educational authorities, in connection with certain state or federally supported programs
- to accrediting organizations to carry out their functions
- to organizations conducting studies for or on behalf of the College
- the results of an institutional disciplinary proceeding against the alleged perpetrator of a crime of violence may be released to the alleged victim of that crime with respect to that crime

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures of the College to comply with the requirements of FERPA. Contact the office that administers FERPA at: Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Ave. SW, Washington DC, 20202-4605.

5. The College designates the following as public or Directory Information that may be released without a student’s written consent, unless the student specifies to the contrary as described below:

- student name, address, phone number and email address
- major field of study and degree sought or completed
- dates of attendance
- degrees and awards received
- expected date of completion of degree requirements and graduation
- full or part time enrollment status and classification (freshman or sophomore)
- most recent previous education agency or institution attended
- participation in officially recognized activities and sports
- height and weight of athletic team members
- date of birth

Delaware County Community College will release only the following directory information to telephonic requests: student name, degree sought or completed, expected dates of completion of degree requirements or graduation, and enrollment status.

6. Students may restrict the release of Directory Information, except to school officials with legitimate educational interest and those listed in #3 above. A student must make the request in writing at the Student Records Office within two weeks of the beginning of the semester. Requests are valid for one year from the date of submission. Students must understand that withholding directory information prevents the College from verifying attendance or graduation to potential employers, publishing the student’s name in a graduation program or dean’s list, and makes athletes ineligible to participate in any activity requiring publication of a team roster.

For purposes of compliance with FERPA, the College considers all students independent.

Notification of Rights under FERPA
The College notifies students of their rights under FERPA through the Delaware County Community College Catalog, the Delaware County Community College Student Handbook and communications to new students from the Dean of Students Affairs. FERPA information is also on the College’s website: www.dccc.edu.

Notice of Publication of Campus Crime Statistics and Graduation Rates
As required by the College and University Security Information Act, security information and campus crime statistics are published every year. They are also available from the Security Office.

In addition, as required by Student Right to Know legislation, graduation and transfer rates are available on the College’s Web site.
Each year over 1,200 DCCC students transfer successfully to hundreds of colleges and universities throughout the United States. The College’s Transfer Office is set up to help students with the transfer process. Advisors can answer your questions or guide you step-by-step through the transfer process. If you are planning to transfer, you are strongly encouraged to meet with a transfer advisor within your first two semesters (or before you reach 30 college credits).

It is important to begin planning for transfer as soon as you enroll at DCCC. Many courses you take at DCCC will fill general education requirements for graduation at your transfer college. Depending on the major you select at your transfer institution, it will be important for you to take your prerequisites here so you can move into your chosen major with ease. The Transfer Office has catalogs, course equivalencies, transfer guides to many colleges and universities, transfer agreements with the schools most often selected for transfer by DCCC students, transfer advisors and a wealth of other information to assist you.

In particular, the College has Dual Admissions and Core-to-Core transfer programs with a variety of colleges and universities within the Philadelphia, Delaware and Chester County areas. These programs are designed to facilitate the student’s ease of transfer into many undergraduate majors. Dual admission entitles students to be admitted into another college or university provided they complete an approved A.A., A.S. or A.A.S. degree from DCCC and meet the minimum GPA requirement. Students who choose to participate in the Dual Admissions program receive distinct advantages, such as waived application fees, scholarship eligibility, and invitations to college sponsored events. An Intent to Enroll form must be completed before the completion of 30 transferable credits. The colleges and universities that offer Dual Admissions programs at DCCC are Albright College, Alvernia University, Cabrini College, Chestnut Hill College, Eastern University, Immaculata University, Neumann University, Peirce College, Rosemont College, Saint Joseph’s University (University College), Temple University and Widener University. Under the Core-to-Core agreement, students who complete an approved A.A. or A.S. degree will satisfy the transfer institution’s general education requirements, unless a specific course or two are required. DCCC students may take advantage of Core-to-Core programs with Albright College, Cabrini College, Chestnut Hill College, Temple University and Villanova University (part-time studies only) and West Chester University.

In addition to Dual Admission programs, DCCC has special partnerships with other universities. Strayer University and Villanova University offer a Guaranteed Admissions program and West Chester University offers a Letter of Intent Program. These programs guarantee admission to the university provided all requirements are met.

The PA System of Higher Education created an Academic Passport for Pennsylvania community college students. This Passport allows graduates in college parallel majors to maximize the number of credits accepted and applied to a degree at one of the 14 universities in the Pennsylvania State System of Higher Education. The Transfer Office has details on these agreements.

Nine Delaware County Community College programs are specifically designed to parallel the first two years at a four-year college or university: Behavioral Science, Business Administration, Communication Arts, Computer Information Systems, Education, Engineering, Liberal Arts, Natural Science and Science for Health Professions. Career programs, with planning, can also prepare students for possible transfer. Check out the Pennsylvania Transfer and Articulation Center (www.PATRAC.org) to search for transferable courses, find information about participating institutions and get step by step instructions for transferring to Pennsylvania’s State Universities and Community Colleges.

Contact the Transfer Office in the Career and Counseling Center on the Marple Campus, at 610-359-5060. Transfer Services can be reached at 610-450-6510 at Exton, and 484-327-6210 for the Downingtown campus; 610-957-5700 for the Southeast Center campus or 610-869-5100 for Pennocks Bridge Learner Services.
These associate degree programs are designed to transfer to a bachelor's degree at a four-year college or university. Transfer of credit to a four-year college is decided by the accepting institution. It is important that students take courses that transfer to their future major. The Transfer Office can help you select appropriate courses to meet your transfer goals.

The semester sequences listed in this section include both requirements and electives for the associate degree and are the recommended sequences for full-time study. Part-time students should take note of these sequences and meet with an advisor to plan course schedules that fulfill degree requirements and meet individual scheduling needs.

### Behavioral Science, Associate in Science

The Behavioral Science program is designed for students planning to earn at least a bachelor's degree in a behavioral science area such as anthropology, psychology or sociology. Concentration in the program develops knowledge of human thought and behavior, both individual and collective.

The Behavioral Science associate degree program is an excellent choice for students who want to gain a broad and varied educational experience as well as those who pursue in-depth study leading to a professional career.

The curriculum focuses on developing the solid foundation of knowledge, skills, attitudes and values required for transfer after completion of the associate degree. It prepares students to delve more deeply into variables such as heredity, environment and learning that influence human behavior.

Upon successful completion of this curriculum, students should be able to:

- Give a brief overview of the sciences of psychology and sociology.
- Delineate the major methodologies for studying human behavior.
- Explain the nature of the affective and cognitive domains as they apply to human behavior.
- Describe three major approaches concerning human development.
- Cite significant psychological and sociological aspects of human development from the prenatal stage through death and dying.
- Detail the socialization process.
- List the causes, classification, treatment of and social responses to mental illness disorder behavior.
- Delineate major influences that impinge socially and psychologically on the individual in today's complex and diverse society.

<table>
<thead>
<tr>
<th>General Education Core</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>ENG 112 English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>HIS 130 Western Civilization I</td>
<td>3</td>
</tr>
<tr>
<td>HIS 140 Western Civilization II</td>
<td>3</td>
</tr>
<tr>
<td>COMM 100 Introduction to Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>Humanities Elective</td>
<td>9</td>
</tr>
<tr>
<td>*Lab Science Elective</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics Elective</td>
<td>6-10</td>
</tr>
<tr>
<td>Open Elective (SOC &amp; PSY)</td>
<td>6</td>
</tr>
<tr>
<td>For Anthropology, open elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Hours Required** 44-48

For BANT (41-45)

*Biology I and II are recommended for Psychology option

### Behavioral Science Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 140 General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 110 Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 215/</td>
<td></td>
</tr>
<tr>
<td>PSY 225 Experiences in Diversity</td>
<td>3</td>
</tr>
</tbody>
</table>

**Option Core**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology (or)</td>
<td>12</td>
</tr>
<tr>
<td>Psychology (or)</td>
<td>9</td>
</tr>
<tr>
<td>Sociology</td>
<td>9</td>
</tr>
</tbody>
</table>

**Total Hours Required** 62-66

Any three courses (nine credits) in one of the following areas:

**Anthropology Option (BANT)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 180 Sociology of Marriage and the Family</td>
<td>3</td>
</tr>
<tr>
<td>SOC 210 Cultural Anthropology</td>
<td>3</td>
</tr>
</tbody>
</table>

And any two of the following three courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUM 160 Introduction to World Religions</td>
<td>3</td>
</tr>
<tr>
<td>HUM 171 Western Myths</td>
<td>3</td>
</tr>
<tr>
<td>HUM 173 Eastern Mythology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Psychology Option (BPSY)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 200 Personality Theories</td>
<td>3</td>
</tr>
<tr>
<td>PSY 215 Industrial Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 220 Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 221 Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 235 Educational Psychology</td>
<td>3</td>
</tr>
</tbody>
</table>

But no more than three credits from the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 210 Lifespan Human Development</td>
<td>3</td>
</tr>
<tr>
<td>PSY 241 Child Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 290 Adulthood and Aging</td>
<td>3</td>
</tr>
</tbody>
</table>

**Sociology Option (BSOC)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 120 Social Problems</td>
<td>3</td>
</tr>
<tr>
<td>SOC 180 Sociology of Marriage and the Family</td>
<td>3</td>
</tr>
<tr>
<td>SOC 210 Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 220 Social Psychology</td>
<td>3</td>
</tr>
</tbody>
</table>

### Business Administration, Associate in Science

The Business Administration program provides students with the necessary courses to transfer to a four-year college or university to pursue a baccalaureate degree in business. Students in this program may prepare for specialization in accounting, international business, economics, finance, human resource management, management, marketing, or other related careers. Students enrolled in this program are strongly encouraged to consult the Transfer Office as early as possible to ensure choosing electives that will be most acceptable to transfer institutions. The Associate in Science degree is awarded at the completion of the program.
Upon successful completion of this curriculum, students should be able to:

- Record financial transactions, perform calculations, and prepare financial statements in accordance with the principles and concepts established by the Financial Accounting Standards Board and the Internal Revenue Service.
- Analyze and interpret financial statements.
- Discuss how financial statements and other accounting information are used by management to plan, control, and make decisions about business.
- Use computer terminology and discuss business computer applications.
- Demonstrate fundamental software, applications skills in word processing, spreadsheets, presentation software, database management, communication, and research.
- Discuss the business skills and common body of knowledge necessary for future study in the areas of management, marketing, finance, accounting, and management information systems.
- Discuss fields of specialization in the areas of business administration.
- Develop a perspective toward leadership, human behavior, and ethical principles in business.
- Apply basic economic principles in the business decision-making process.

General Education (40-45 Core Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>ENG 112 English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>ECO 210 Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECO 220 Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>— History or Foreign Language</td>
<td>6</td>
</tr>
<tr>
<td>— Science Electives</td>
<td>7-8</td>
</tr>
<tr>
<td>— Mathematics Sequence Electives</td>
<td>6-10</td>
</tr>
<tr>
<td>— Social Science Electives</td>
<td>3</td>
</tr>
<tr>
<td>— Humanities Elective</td>
<td>3</td>
</tr>
<tr>
<td>— Social Science or Humanities Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Business Core (12 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 111 Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACC 112 Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>DPR 100 Introduction to Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>BUS 220 Elementary Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

12

Accounting Option (BUAC) (9 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 115 Computerized Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 232 Principles of Finance</td>
<td>3</td>
</tr>
</tbody>
</table>

19

Marketing Option (BUMR) (9 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 230 Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BUS 231 Principles of Advertising</td>
<td>3</td>
</tr>
</tbody>
</table>

9

Management Option (BUMG) (9 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 210 Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 215 Human Resource Management</td>
<td>3</td>
</tr>
</tbody>
</table>

9

General Business Option (BUAD) (9 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>— Business Elective</td>
<td>3</td>
</tr>
<tr>
<td>— Business Elective</td>
<td>3</td>
</tr>
<tr>
<td>— Business Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

9

Sports Management Option (BUSH) (9 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 232 Introduction to Sports Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 236 Principles of Sport Management</td>
<td>3</td>
</tr>
<tr>
<td>— BUS 199 or Business Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

9

Total Hours Required: 49-54

NOTE: Students who have had experience in the above areas may be awarded credit through the College's Credit for Prior Learning program.

Business electives for this degree should be chosen from the following courses: ACC 210, BUS 100, BUS 101, BUS 111, BUS 130, BUS 199, BUS 210, BUS 211, BUS 212, BUS 214, BUS 215, BUS 220, BUS 230, BUS 231, BUS 232, BUS 236, BUS 241, BUS 243, DPR 105, DPR 111 and DPR 113.

Under special circumstances, other courses in accounting, business and computer information systems may be permitted as electives when recommended by the advisor and approved by the Associate Dean, Business/Computer Information Systems.

Mathematics courses chosen should be in one of the following sequences to meet requirements for the associate in science degree: MAT 135 and 136, MAT 140 and 141 or MAT 160 and 161. Most four-year colleges prefer the MAT 135 and MAT 136 sequence for business majors.

The General Business Option should be selected by students transferring to four-year colleges accredited by the American Assembly of Collegiate Schools of Business. Students should check with their advisor or the Transfer Office for a list of these schools. We recommend that students become familiar with program requirements of the transfer institution they plan to attend.

Communication Arts, Associate in Arts

This curriculum is designed for students who wish to continue academic study in the field of communication including, but not limited to, theatre, journalism, public relations, advertising, interpersonal communication, corporate communication and mass communication. The Communication Arts major at Delaware County Community College blends the theoretical with the practical. Students must choose an option within the major: theatre, journalism or communication studies.

Communication Arts majors take core courses required for the associate in arts degree as well as for the bachelor of arts degree from most transfer institutions. In addition, students select specialized courses and related electives. When selecting Communication Arts electives, the student should consult four-year transfer institution requirements.

Upon completion of this curriculum, students should be able to:

- Apply the basic theory and principles of human communication.
- Communicate effectively using critical thinking and organization.
- Describe the impact of communications practitioners and recognize the moral and ethical responsibilities inherent in the application of communication theory and technology.
- Recognize the varied contributions made by the objective observer and recorder.
- Demonstrate the importance of the artist and the arts to American culture.
- Develop and employ a perspective on the present through the study of ancient and past civilizations and cultures.

All Communication Arts students are required to take the general education course core courses listed below. These courses are necessary for transfer since they form the basis for all Communication Arts degree requirements. In addition, students select 12 credits from those courses required or recommended for the students' chosen option. When carefully chosen, the general humanities, social science, science/math and open electives provide the foundation necessary for success in an advanced transfer program.
Communication Arts Degree Program

1. Theatre Option (THEA): Students will select from the following courses to meet the option requirement and prepare for a theatre degree in performance, design, direction, administration, or education. Although these courses are oriented primarily toward stage performance, they apply to television and film as well. Students enrolled in the theatre option, in order to graduate, will participate in at least one Delaware County Community College drama presentation.

Students select from the following courses to meet the Theatre Option requirements: 12 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRA 100 Introduction to Theatre</td>
<td>3</td>
</tr>
<tr>
<td>DRA 110 Acting I (Required)</td>
<td>3</td>
</tr>
<tr>
<td>DRA 111 Acting II</td>
<td></td>
</tr>
<tr>
<td>DRA 105 Acting Shakespeare</td>
<td></td>
</tr>
<tr>
<td>DRA 113 Introduction to Educational Theatre</td>
<td></td>
</tr>
<tr>
<td>DRA 116 Stagecraft</td>
<td></td>
</tr>
<tr>
<td>DRA 130 Voice and Management</td>
<td></td>
</tr>
<tr>
<td>ENG 222 Introduction to Shakespeare</td>
<td></td>
</tr>
<tr>
<td>HUM 141 Film Language</td>
<td></td>
</tr>
<tr>
<td>HUM 142 American Cinema</td>
<td></td>
</tr>
<tr>
<td>MUS 127 Survey of American Musical</td>
<td></td>
</tr>
</tbody>
</table>

Students may also select from the above courses to meet humanities and open elective requirements.

II. Journalism Option (JOUR): This option is intended to prepare students for a career in the print media field. Students contemplating a career in newspaper writing, photojournalism, public relations, and newswriting for the electronic media should elect this option.

Students select from the following courses to meet the Journalism Option requirements: 12 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 130 Fundamentals of Journalism I (Required)</td>
<td>3</td>
</tr>
<tr>
<td>ENG 131 Fundamentals of Journalism II (Required)</td>
<td>3</td>
</tr>
<tr>
<td>ENG 205 Creative Writing</td>
<td></td>
</tr>
<tr>
<td>ART 160 Black and White Photography I</td>
<td></td>
</tr>
<tr>
<td>ART 161 Black and White Photography II</td>
<td></td>
</tr>
<tr>
<td>ART 162 Black and White Photography III</td>
<td></td>
</tr>
<tr>
<td>ART 166 Black and White Digital Negative</td>
<td></td>
</tr>
<tr>
<td>ART 169 Medium and Large Format Photography</td>
<td></td>
</tr>
<tr>
<td>BUS 231 Principles of Advertising</td>
<td></td>
</tr>
<tr>
<td>COMM 115 Introduction to Public Relations</td>
<td></td>
</tr>
</tbody>
</table>

Students may also select from the above courses to meet humanities and open elective requirements.

III. Communication Studies Option (COMM): This concentration is designed for students interested in pursuing an undergraduate degree in Communication Studies. Completing this option prepares students for further study at the baccalaureate level or for career enhancement.

Students must complete 6 credits in speech communication (COMM) and 6 additional credits from the following list to meet the Communication Studies Option: 12 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 105 Small Group Communication</td>
<td></td>
</tr>
<tr>
<td>COMM 111 Public Speaking</td>
<td></td>
</tr>
<tr>
<td>COMM 115 Introduction to Public Relations</td>
<td></td>
</tr>
<tr>
<td>COMM 200 Argumentation and Debate</td>
<td></td>
</tr>
<tr>
<td>HUM 141 Film Language</td>
<td></td>
</tr>
<tr>
<td>HUM 142 American Cinema</td>
<td></td>
</tr>
<tr>
<td>BUS 230 Principles of Marketing</td>
<td></td>
</tr>
<tr>
<td>BUS 231 Principles of Advertising</td>
<td></td>
</tr>
</tbody>
</table>

Students may also select from the above courses to meet humanities and open elective requirements.

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>COMM 100 Introduction to Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>HIS 130 Western Civilization I</td>
<td>3</td>
</tr>
<tr>
<td>Humanities or Foreign Language Elective</td>
<td>3</td>
</tr>
<tr>
<td>Science or Mathematics Elective</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 112 English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>HIS 140 Western Civilization II</td>
<td>3</td>
</tr>
<tr>
<td>COMM 104 Introduction to Mass Communication</td>
<td>3</td>
</tr>
<tr>
<td>Humanities or Foreign Language Elective</td>
<td>3</td>
</tr>
<tr>
<td>Science or Mathematics Elective</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

Third Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option Requirements or Option Electives</td>
<td>6</td>
</tr>
<tr>
<td>Humanities or Foreign Language Elective</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Science or Mathematics Elective</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
</tr>
</tbody>
</table>

Fourth Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option Requirements or Option Elective</td>
<td>3</td>
</tr>
<tr>
<td>Humanities or Foreign Language Elective</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Open Elective</td>
<td>3</td>
</tr>
<tr>
<td>Science or Mathematics Elective</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
</tr>
</tbody>
</table>

Total Hours Required 60-66

Computer Information Systems, Associate in Science (DPRS)

The curriculum in Computer Information Systems is a two-year program for students who plan to continue their studies toward the bachelor’s degree at a four-year college or university. Students in this major apply their knowledge of computer science to the world of business and industry. Programs at four-year institutions may be listed as Computer Science, Computer Information Systems, Computer Information Science, Management Information Systems, or Information Technology. The associate in science degree will be awarded upon successful completion of this program.

Upon successful completion of this curriculum, students should be able to:

- Analyze problems in terms of the requirements of the computer and the business or industry results required.
- Use detailed program logic to solve business and industry problems.
- Develop detailed business computer applications programs using popular computer languages and provide documentation for the programs.
• Use debugging techniques, a computer system library, software aids and utilities in the development of computer applications programs.
• Communicate effectively using appropriate business and computer terminology in a business or industry environment.
• Maintain general accounting records for a department within a business organization.
• Discuss the economic environment in which business function.
• Discuss the relationship between the information technology department and other departments in a business.

See Electives Listing, page 74

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>BUS 100 Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>MAT 135* Business Calculus</td>
<td>3</td>
</tr>
<tr>
<td>DPR 108 Introduction to Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective*</td>
<td>3</td>
</tr>
<tr>
<td><strong>Fourth Semester</strong></td>
<td><strong>17</strong></td>
</tr>
<tr>
<td>ACC 111 Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ECO 210 Macroeconomics Principles</td>
<td>3</td>
</tr>
<tr>
<td>DPR 212 Data Structures &amp; Algorithms</td>
<td>4</td>
</tr>
<tr>
<td><strong>Science Elective</strong></td>
<td><strong>4</strong></td>
</tr>
<tr>
<td><strong>Total Hours Required:</strong> 61</td>
<td></td>
</tr>
</tbody>
</table>

*Students are required to take two sequential mathematics courses. The following sequential mathematics courses may be substituted: MAT 150 and MAT 160 and MAT 160 and MAT 161.

**Education, Associate in Arts (EDUC)**

The Education curriculum was developed to meet the needs of current and prospective students interested in transferring to a four-year institution for the purpose of receiving a PA Public School Teacher’s Certification. Areas of certification include early childhood education, elementary, secondary, special education, or any combination of any of these two majors. Among colleges and universities there are variances within the first two years at some schools contingent upon the area of PA Public School Certification pursued. Additionally, each of these areas of certification involves different course selections. All of these conditions necessitate working closely with a transfer counselor in the Career and Counseling Center to ensure a seamless transfer process to a four-year institution.

Upon successful completion of this curriculum, students should be able to:

* Comprehend the practical aspects of education, including governance, politics, funding, law, psychology, and philosophical and social effects.
* Develop an understanding of teaching as a career choice, including job requirements, responsibilities, advantages, and disadvantages.

**Total Hours Required: 61-62**

*Math, Social Science and Public Speaking requirements vary considerably among transfer institutions. Students should consult the Career and Counseling Center regarding appropriate course for the Transfer Institution.

Students expecting to enroll in a four-year Pennsylvania Teacher Education program should be aware of current PRAXIS exam requirements. Information may be obtained from the Career and Counseling Center.

This curriculum is designed for students transferring to a four year degree in education. All education majors should apply to the four-year college or university up to one year before they plan to attend. Most colleges and universities require a 3.0 or higher grade point average to be accepted into the Education program. It is recommended that students prepare and take the PRAXIS test after 45 credits.

*Education electives are EDU 205, EDU 215
Engineering, Associate in Science Degree (EGR)

The Engineering program is a two-year preparatory curriculum for students who plan to continue their education at a four-year institution and complete their major in an engineering science field.

Upon successful completion of this curriculum, students should be able to:
- Determine the specifications and parameters of engineering problems.
- Apply physical principles and laws to engineering problems.
- Apply modern analytical tools to engineering problems.
- Present technical information in oral, written or graphic form.
- Identify cultural, social and personal factors influencing engineering professions and career development.

Requirements (Credits)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Curriculum Option</td>
<td>9-13</td>
</tr>
<tr>
<td>See Electives Matrix below for list of approved electives</td>
<td>3</td>
</tr>
<tr>
<td>Science: CHE 110, CHE 111, PHY 131, PHY 132</td>
<td>16</td>
</tr>
<tr>
<td>Mathematics: MAT 160, MAT 161, MAT 260, MAT 261</td>
<td>16</td>
</tr>
<tr>
<td>English: ENG 100, ENG 112</td>
<td>6</td>
</tr>
<tr>
<td>Social Science Electives: See College catalog for a list of approved electives</td>
<td>9</td>
</tr>
<tr>
<td>Humanities Electives: See College catalog for a list of approved electives</td>
<td>6</td>
</tr>
</tbody>
</table>

First Semester (15 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics/Science Electives</td>
<td>9</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester (17 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 112 English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>EGR 150 Engineering Topics</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics/Science Electives</td>
<td>13</td>
</tr>
</tbody>
</table>

Third Semester (16-18 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Curriculum Options</td>
<td>6-8</td>
</tr>
<tr>
<td>Mathematics/Science Electives</td>
<td>7</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Fourth Semester (15-17 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Curriculum Option</td>
<td>3-5</td>
</tr>
<tr>
<td>Humanities Electives (2)</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics/Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Hours Required: 63-67

*Students in the Computer Option should take DPR 108 in the first year.

Associate In Fine Arts, (AFA)

The Associate in Fine Arts Degree will prepare students to transfer into a four-year Bachelor of Fine Arts program. Students will be provided with all foundation-level studio courses with a primary concentration in drawing and painting.

Upon successful completion of this program, students should be able to:
- Demonstrate knowledge of the general rules of visual literacy in regard to the dynamics of two and three dimensional design principles and drawing from observation.
- Demonstrate knowledge of the general rules of visual literacy in regard to the dynamics of basic color theory including the manipulation of hue, value and chroma.
- Demonstrate knowledge of the general rules of visual literacy in regard to the manipulation of the concept of the picture plane.
- Demonstrate knowledge of visual literacy in regard to understanding of the forms and concepts associated with the history of art including western, non-western and modern and contemporary art.
- Demonstrate knowledge of visual literacy in conjunction with the application of digital technology and/or photographic technology.
- Demonstrate knowledge of visual literacy in the application of subjective and non-objective subject matter in addition to utilizing traditional figurative motifs.
- Demonstrate the ability to prepare materials for the process of painting and drawing.
- Communicate issues of critical thinking skills via the creation of artworks and participation in the formal critique process.
- Produce a portfolio of artworks that demonstrates all of the above principles.

Suggested Engineering Curriculum Option Electives, by transfer discipline:

(Select any three courses.) Students are strongly encouraged to consult with both the DCCC Transfer Office as well as their academic advisor prior to selecting Engineering Curriculum Option courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Chemical</th>
<th>Civil</th>
<th>Computer</th>
<th>Electrical</th>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 200 Organic Chemistry I</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHE 201 Organic Chemistry II</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPR 108 Intro. to Computer Science</td>
<td></td>
<td>x*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPR 212 Data Structures &amp; Algorithms</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPR 226 Object Oriented C++</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGR 100 Engineering Graphics</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>EGR 200 Engineering Mechanics I</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>EGR 201 Engineering Mechanics II</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>EGR 210 Engineering Circuits</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>EGR 220 Engineering Thermodynamics</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>MAT 200 Linear Algebra</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

*Students in the Computer Option should take DPR 108 in the first year.
**First Semester**  
ART 130 Drawing I ......................................................... 3  
ART T110 Art History I .................................................. 3  
ENG 100 English Composition I ............................ 3  
GRA 121 Three-Dimensional Design .................... 3  
GRA 122 Two-Dimensional Design ......................... 3  

Total Credits Required: 15

**Second Semester**  
ART 111 Art History II .................................................. 3  
ENG 112 English Composition II ............................ 3  
GRA 134 Drawing II ........................................................ 3  
GRA 138 Social Science Elective .............................. 3  

Total Credits Required: 15

**Third Semester**  
ART 140 Painting I .......................................................... 3  
ART 145 Watercolor Painting ..................................... 3  
GR A121 Digital Imaging (OR) ........................................ 3  
ART 160 Black and White Photography ..................... 3  

Total Credits Required: 16

**Fourth Semester**  
ART 141 Painting II .......................................................... 3  
ART 203 History of Modern Art (OR) ......................... 3  
ART 112 Non-Western Art History (OR) ..................... 3  
HUM 100 Introduction to Visual Art .......................... 3  
ART 143 Life Drawing and Painting ......................... 3  
ART 205 Portfolio Preparation ................................. 3  

Total Credits Required: 15

**General Education Core: (41-45 credits)**  
ENG 100 English Composition I ........................................ 3  
ENG 112 English Composition II .................................. 3  
HIS 130 Western Civilization I (or) ......................... 3  
HIS 140 Western Civilization II ................................ 3  
COMM 100 Introduction to Interpersonal Communication ... 3  
PSY 140 General Psychology .......................................... 3  
SOC 110 Introduction to Sociology .............................. 3  
SOC 215/216/217  
PSY 225 Experiences in Diversity .............................. 3  
       Humanities Elective ................................................... 3  
       Lab Science Elective ................................................ 8  
       Mathematics Elective ............................................. 6-10  
       Open Elective ....................................................... 3  

Total Hours Required: 41-45

*Biology I and II are recommended for the Human Service Associate Degree

**Human Service Core: (12 credits)**  
HUS 101 Introduction to Human Services .................. 3  
PSY 202 Theories of Counseling .................................. 3  
PSY 203 Counseling Skills ........................................... 3  
PSY 220 Abnormal Psychology .................................. 3  

Plus any 3 courses (9 credits) from the following courses:  
PSY 204 Foundations of Addictions ............................. 3  
PSY 210 Lifespan Human Development ......................... 3  
PSY 290 Adulthood and Aging ..................................... 3  
Human Service Electives ............................................. 6  

Total: 62-66 credits

**Human Service, Associate in Science Degree (HUS)**

The Human Service Associate in Science Degree program is designed for students planning to earn at least a bachelors degree in a behavioral science area such as social work, or human services. The Human Service Associate in Science degree is transfer program for individuals who are interested in obtaining the knowledge necessary to develop a career path in the increasingly growing Human Service field. This degree addresses the salient policies, theories, and applied practices utilized when working with individuals and families from a multi-systemic perspective. Integrating psychological, social work and counseling perspectives, an overarching goal of the program is to develop the basic knowledge and foundational skills necessary to effectively work with and advocate for marginalized populations. As such, the program places a strong emphasis on developing the knowledge, skills and awareness necessary to be a culturally competent human service worker.

Upon successful completion of this curriculum, students should be able to:
- Define the various roles of the human service professional
- Apply contemporary counseling theories and techniques to typical life problems such as those of adolescence, relationships, career choice and parenthood
- Describe the process of public policy formation and implementation
- Understand human needs in contemporary America and the primary social supports in meeting those needs
- Apply theoretical concepts and practical skills under supervision in social service agencies
- Define the functions of service agencies in the area of public health, welfare, mental health, and rehabilitation
- Examine the organization of various community service agencies on the local, county and state level

**Liberal Arts, Associate in Arts (LA)**

The Liberal Arts curriculum provides the core liberal arts component of most bachelor's degree programs and prepares students for transfer to four-year colleges or universities. This program offers a course of study for students whose goal is an undergraduate degree in areas such as: education, foreign language, communications, the social and behavioral sciences, philosophy and the arts. Since curriculum requirements of other institutions vary, students should meet with a transfer advisor at DCCC to obtain information concerning entrance requirements for the specific school and program in which they are interested.

Upon successful completion of this curriculum, students should be able to:
- Demonstrate an ability to evaluate, analyze and synthesize ideas gained through interaction with a variety of sources.
- Use research methods and documentation skills to collect, organize and present data.
- Organize a series of logically developed ideas with a thesis leading to a reasonable conclusion.
- Employ standard English usage to present assertions in oral and written form.
- Apply critical thinking and information literacy skills to understand concepts in the arts, literature, natural and social sciences, business and mathematics.

Students considering an advanced degree in education, behavioral science or communication arts should also review the DCCC catalog for these degree programs.
Successful completion of Delaware County Community College’s Liberal Arts program leads to the awarding of an Associate in Arts degree.

Open Electives must be selected from the college-transfer courses on Electives Listing on Page 73.

### Natural Science, Associate in Science (NSCI)

The Natural Science curriculum is designed to prepare students to continue study at four-year institutions in fields such as biology, microbiology, chemistry, and physics. The curriculum provides an academic foundation to prepare students for careers in areas such as molecular biology, biotechnology, ecology, industrial chemistry, chemical technology, medicine, dentistry, pharmacy, wildlife biology, and secondary education.

Upon successful completion of this curriculum, students should be able to:
- Demonstrate an understanding of scientific principles and concepts.
- Apply scientific principles and concepts in the solution of problems and experiments.
- Perform selected tasks relative to laboratory experiments in the natural sciences.
- Use information from scientific literature in completing course competencies.
- Interpret scientific data according to established standards.

### Co-op/Internship or Equivalent: 3 if possible

Total Hours Required: 62-66

*Natural science/math electives must total a minimum of 14 credits and must be achieved by taking MAT 120 and MAT 121 or higher-level math and two laboratory science courses.

### Science for Health Professions, Associate in Science (HSCI)

This program is designed for students who plan to transfer and continue their education in an allied health field at another institution. It provides the basic sciences needed for a variety of such programs, including Baccalaureate Nursing, Physical Therapy, Occupational Therapy, Physician Assistant and Pharmacy. Since admission requirements to other institutions vary, students should obtain information on entrance requirements for the specific school and program in which they are interested. Students are strongly encouraged to consult with both the Transfer Office at DCCC and their advisor regarding the best course selections for their transfer.

Upon successful completion of this curriculum, students should be able to:
- Use mathematics, read, write and speak in a manner consistent with his or her chosen health science career.
- Use the scientific method to gather data, interpret data and draw conclusions.
- Demonstrate laboratory skills, in basic sciences.
- Access printed and electronic resources to obtain information.
- Demonstrate cognitive and affective skills needed to respond to continuous changes and challenges in health science professions.
- Demonstrate the ability to approach current societal issues from a scientific perspective.
- Use cooperative skills to solve problems.
### Requirements

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Social Science/Business Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

**Recommended:** PSY 140, DPR 100

| Humanities Elective                          | 3       |
| Mathematics/Science Electives                | 26      |

Select from: MAT 140 or above (minimum 3 credits required)
BIO 110, 111, 115, 150, 151, 200, 210, 220, 230, CHE 110 or above,
PHY 110 or above

| Mathematics/Science Elective                 | 3-5     |

Select from: MAT 140 or above (MAT 210 recommended), BIO 100 or above, CHE 106 or above, SCI 100

| Open Electives                               | 13-15   |

**See Electives Listing, page 74**

### First Semester

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 100 English Composition I</td>
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<td>Social Science or Business Elective</td>
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<td>Laboratory Science Elective</td>
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<td>Mathematics Elective</td>
<td>3-4</td>
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<tr>
<td>Open Elective</td>
<td>3-5</td>
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</table>

**Credits:** 16-18

### Second Semester

<table>
<thead>
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<tr>
<td>ENG 112 English Composition II</td>
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<tr>
<td>Social Science or Business Elective</td>
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<tr>
<td>Laboratory Science Elective</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics or Laboratory Science Elective</td>
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**Credits:** 16-17

### Third Semester

<table>
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<tr>
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</thead>
<tbody>
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<td>Mathematics or Laboratory Science Elective</td>
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</tr>
<tr>
<td>Mathematics/Science Elective</td>
<td>3-5</td>
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<tr>
<td>Open Electives</td>
<td>7-8</td>
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</tbody>
</table>

**Credits:** 14-17

### Fourth Semester

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<tbody>
<tr>
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</tr>
<tr>
<td>Laboratory Science Elective</td>
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<tr>
<td>Mathematics or Laboratory Science Elective</td>
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<tr>
<td>Open Elective</td>
<td>3-4</td>
</tr>
</tbody>
</table>

**Credits:** 14-15

**Total Hours Required 60-67**
These associate degree programs are designed to prepare the student for the workplace.

The semester sequences listed in this section include both requirements and electives for the associate degree and are the recommended sequences for full-time study. Part-time students should take note of these sequences and meet with an advisor to plan course schedules that fulfill degree requirements and meet individual scheduling needs.

**Accounting, Associate in Applied Science (ACCT)**

The career program in Accounting prepares students for various entry-level positions in the field of accounting. It is strongly recommended that students who plan to pursue further studies at a four-year institution immediately after graduation to major in Accounting take the Business Administration with the Accounting Concentration program.

Upon successful completion of this program, students should be able to:

- Perform all steps in the accounting cycle for business entities.
- Compute and record those amounts arising from representative transactions unique to partnerships or corporations.
- Analyze financial statements, recognize potential problem areas, and suggest appropriate actions to alleviate or eliminate problems.
- Prepare a federal income tax return and other tax forms for representative individuals including the person who is operating the business as a single proprietorship.
- Record representative cost accounting transactions and subsequently reflect the effect of these transactions in appropriate financial statements.
- Recognize special needs of business and design the records required to meet such needs.
- Prepare financial forecasts based on information from both internal and external sources.
- Prepare cash budgets.
- Prepare production budgets and subsequent variance reports.
- Demonstrate a knowledge of capital budgeting.
- Discuss the importance of ethical behavior in business operations.
- Demonstrate efficient utilization of appropriate accounting software.
- Apply basic economic principles in the business decision-making process.

See Electives Listing, Page 74

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100</td>
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<tr>
<td>MATH 105</td>
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<tr>
<td>BUS 100</td>
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<td>ACC 111</td>
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<td>DPR 100</td>
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<td><strong>Total</strong></td>
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**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENG 112</td>
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<tr>
<td>ACC 112</td>
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<td>ACC 115</td>
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<td>BUS 243</td>
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<td><strong>Total</strong></td>
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**Third Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACC 201</td>
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<tr>
<td>ACC 202</td>
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<tr>
<td>BUS 130</td>
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<td><strong>Total</strong></td>
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**Fourth Semester**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ACC 201</td>
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</tr>
<tr>
<td>ACC 202</td>
<td>3</td>
</tr>
<tr>
<td>BUS 199</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15-16</strong></td>
</tr>
</tbody>
</table>

**Total Credits Required: 62-63**

Students who have had experience in the above areas may be awarded credit through the College’s Credit for Prior Learning program.

*Recommended BUS/DPR courses from which the student should select are: Advanced Office (DPR 111), Data Base-Access (DPR 113), Principles of Management (BUS 210), Supervision (BUS 211), Organizational Behavior (BUS 214), Human Resource Management (BUS 215), Business Statistics (BUS 220), Principles of Marketing (BUS 230), Principles of Advertising (BUS 231), Principles of Finance (BUS 232). Applied Accounting (ACC 100) MAY NOT BE USED to meet any elective requirement in this program.*

A certificate in Professional Accounting is also available. See Page 57.

**Administration of Justice, Associate in Applied Science (ADJ)**

The Administration of Justice program gives students a broad perspective on the justice system. The program is designed to meet the educational needs of professionals who seek specific knowledge and skills for career enhancement as well as those seeking entry-level employment in a variety of areas within the justice system.

There are two elective options that give students the opportunity for career exploration: The Law Enforcement option focuses on contemporary police services, police-personnel supervision and traffic-accident reconstruction. The Corrections and Judicial option explores corrections, probation and parole; alternatives to incarceration; and community relations and the justice practitioner.

The program serves as a respected and acceptable pre-law degree after continuing studies in a four-year degree program are completed. The program courses are of high transfer acceptability to most four-year Justice Studies programs.

Upon successful completion of this program, students should be able to:

- Identify the basic principles and procedures that govern the administration of justice in the American society.
- Describe the major systems that deal with the administration of justice in America.
- Define the principles and procedures involved in effective criminal investigation.
- Explain the fundamental concepts and principles of management employed in effective administration of justice.
- Develop strong observational and reporting skills.
- Critique policies and operations of criminal justice organizations constructively.
- Interpret legal safeguards guaranteed by the U. S. Constitution and other statutes.
• Respect the dignity and humanity of both victim and perpetrator of crime.
• Demonstrate the importance of personal integrity and ethical behavior within the criminal justice system.
• Evaluate crime causality and its relationship to the Administration of Justice.
• Comprehend the role of technology in the Administration of Justice.

See Electives Listing, Page 74

First Semester Credits
ENG 100 English Composition I ........................................... 3
ADJ 101 Introduction to Criminal Justice ............................ 3
ADJ 110 Criminal Law .................................................... 3
DPR 100 Introduction to Information Technology ................. 3
SOC 100 Human Relations (or) ........................................ 3
SOC 110 Introduction to Sociology ................................... 3

Second Semester
ENG 112 English Composition II ........................................ 3
SOC 100 Human Relations (or) ........................................ 3
ADJ 120 Principles of Investigation ................................. 3
ADJ 240 Criminology .................................................... 3
PSY 140 General Psychology ........................................... 3

Third Semester
ADJ 261 The Youthful Offender ........................................ 3
HIS 110 American History I (or) ..................................... 3
HIS 120 American History II ........................................... 3
_______ Math/Science Elective ........................................ 3-4
_______ ADJ Elective .................................................... 3
_______ Humanities Elective .......................................... 3

Fourth Semester
Math/Science Elective .................................................. 3-4
ADJ 262 U.S. Courts: Contemporary Issues and Problems .... 3
TCC 121 Project Management Processes .......................... 3
TCC 111 Technical Communication .............................. 3
TCC 112 CADD Graphics ............................................ 3
TCS 100 Construction Blueprint Reading ........................ 3

Total Credits Required: 60-62

Students who have experience in the above areas may be awarded credit through the College’s Credit for Prior Learning program.

It is highly recommended that students intending to transfer to a four-year institution to pursue a Bachelor’s degree in Administration of Justice consult with a transfer counselor to insure that the institution to which the student is intending to transfer will accept the courses the student has selected.

Architectural Technology, Associate in Applied Science (ARC)

The associate degree program in Architectural Technology prepares students for entry-level employment in professional offices, industries and businesses related to the architectural and building fields. Professional registration is available through continued education.

Upon successful completion of this program, students should be able to:
• Demonstrate knowledge of two- and three-dimensional design processes.
• Interpret architectural drawings.

The associate degree in applied science will be awarded after satisfactory completion of the four-semester program.

First Semester Credits
ENG 110 English Composition I ........................................ 3
*MAT 110 Technical Mathematics I .................................. 4
TCC 111 Technical Communication ................................ 3
TCC 112 CADD Graphics ............................................ 3
TCS 100 Construction Blueprint Reading ........................ 3

Second Semester
*MAT 111 Technical Mathematics II ................................ 4
PHY 100 Technical Physics I ......................................... 3
TCC 122 2-D CADD ........................................................ 3
ARC 121 Architectural Graphics I .................................... 3

Third Semester
ENG 112 English Composition II ........................................ 3
PHY 101 Technical Physics II ......................................... 3
TME 216 Statics and Strength of Materials ......................... 4
TCS 111 Methods/Materials of Construction I ................... 3
ARC 215 Architectural Design Concepts .......................... 3

Fourth Semester
TCS 112 Methods/Materials of Construction II ................... 3
ARC 221 Architectural Graphics II .................................. 3
TCC 228 Design Project Methods (or) ............................ 3
ARC 199 Co-op/Internship ........................................... 3

Total Credits Required: 63

*MAT 140, MAT 141 or MAT 160, MAT 161 may be elected instead.

Automated Manufacturing/Robotics Technology, Associate in Applied Science (ROBO)

The Automated Manufacturing/Robotics Technology program is designed to prepare students for various fields within the manufacturing industry. Specific courses offer basic instruction in Computerized Numerically Controlled (CNC) programming of machine tools, integration of electro/mechanical systems for automation projects as well as the development of robotic work cells.

Upon successful completion of this program, students should be able to:
• Set up and operate conventional and computer numerically controlled machine tools.
• Prepare manual and computer-assisted programs for directing the operation of numerically controlled machine tools.
• Describe the structural and functional characteristics of various types of robots and automated systems.
• Define accident prevention procedures associated with the operation of automated equipment.
• Explain the aspects of flexibility associated with computerized automated systems.
• Identify methods and equipment needed to integrate a robotic work cell, or an automated system.
• Develop, write and modify programmable controller networks.
• Integrate automated materials handling, assembly, manufacturing and transfer equipment within a work cell.
• Document automation specifications in textual and graphical format.

First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 110</td>
<td>English Composition I</td>
<td>3</td>
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<tr>
<td>*MAT 110</td>
<td>Technical Mathematics I</td>
<td>4</td>
</tr>
<tr>
<td>TCC 111</td>
<td>Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>TCC 112</td>
<td>2-D CADD</td>
<td>3</td>
</tr>
<tr>
<td>TME 111</td>
<td>Machining Technology</td>
<td>3</td>
</tr>
<tr>
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</table>

Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>*MAT 111</td>
<td>Technical Mathematics II</td>
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<tr>
<td>PHY 100</td>
<td>Technical Physics I</td>
<td>3</td>
</tr>
<tr>
<td>TCC 121</td>
<td>Project Management Processes</td>
<td>3</td>
</tr>
<tr>
<td>TCC 122</td>
<td>Two-Dimensional CADD</td>
<td>3</td>
</tr>
<tr>
<td>TEL 101</td>
<td>DC Analysis</td>
<td>3</td>
</tr>
<tr>
<td>TDD 128</td>
<td>Detailing-Assembly Fixture Design</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16-17</td>
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</table>

Third Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENG 112</td>
<td>English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>PHY 101</td>
<td>Technical Physics II</td>
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</tr>
<tr>
<td>TME 210</td>
<td>CNC Operations</td>
<td>3</td>
</tr>
<tr>
<td>TDD 216</td>
<td>Three-Dimensional CADD</td>
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</tr>
<tr>
<td>TEL 200</td>
<td>Electro/Mechanical Systems</td>
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</tr>
<tr>
<td>TME 212</td>
<td>Computer/Aided Machining</td>
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Fourth Semester

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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>TME 220</td>
<td>Robotics and Programmable Controllers</td>
<td>3</td>
</tr>
<tr>
<td>TME 222</td>
<td>Advanced Computer Aided Machining</td>
<td>3</td>
</tr>
<tr>
<td>TME 229</td>
<td>Fluid Power and Controls</td>
<td>4</td>
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<td></td>
<td>Humanities Elective</td>
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<tr>
<td></td>
<td>Social Science Elective</td>
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<td></td>
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<td>16</td>
</tr>
</tbody>
</table>

Total Credits Required: 63-64

*MAT 140, MAT 141 or MAT 160, MAT 161 may be elected instead.

**Automotive Technology, Associate in Applied Science (AUTO)**

The Associate in Applied Science degree program will prepare students for immediate career opportunities. The program is designed to provide the broad academic, technical education that is necessary to function in today's automotive service industry. This program includes fundamental, basic, intermediate and advanced theories for testing, diagnosing malfunctions, evaluating and repairing automotive systems and components. Students will learn to apply new skills in specialized service work, business management, communications, decision-making, and social work habits. Career opportunities are unlimited within the automotive industry. Employment classification includes but is not limited to, automotive technicians, skilled in many areas and/or specializing in one or more areas of diagnosis and repair. Other possible career paths include shop supervisor, service manager, parts managers, service writers, service dispatcher, auto sales person, automotive instructors, automotive company instructors, and parts line instructors.

With today's increase of electronic components used on the automobile and the projected increase of electronics in the years to come, it is imperative that entering students have a background in electricity, mathematics, business skills, computer science and an understanding of the English language, both in reading and writing.

Upon successful completion of this program, students should be able to:

- Apply various automotive theories for testing, diagnosing malfunctions, evaluating, and repairing automotive systems and components.
- Demonstrate proficiency in the use of basic and specialized tools.
- Interpret electronic and written service manuals, flat rate manuals, and technical service bulletins.
- Demonstrate proficiency in the use of electronic diagnostic equipment.
- Obtain the Pennsylvania Emission and Safety Inspector Certification.
- Achieve employment as 2nd to 1st class automotive technician.
- Utilize shop tools, personal hand tools, and power tools.
- Identify and explain the starting system, its design, components, control circuits.
- Perform starting system testing.
- Inspect air induction system, exhaust system components, turbochargers and superchargers.
- Diagnose, service and repair anti-lock brake systems and automated traction control.
- Repair frames, suspension system components, McPherson's Strut Systems, and independent suspension systems.
- Perform front suspension inspection, service, and component repairs.
- Analyze fuel injection system defects
- Determine the extent of repair and/or adjustments for correction of the fuel injection defects.
- Troubleshoot and repair the charging system.
- Diagnose, service, disassemble, measure and repair, the automotive engine.
- Differentiate between manual and automatic transmission/transaxles, power flow and hydraulic applications.

First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AUT 100</td>
<td>Introduction to Automotive Service Operation and Shop Practices</td>
<td>2</td>
</tr>
<tr>
<td>AUT 101</td>
<td>Automotive Electricity and Electronics</td>
<td>4</td>
</tr>
<tr>
<td>AUT 102</td>
<td>Automotive Engines</td>
<td>4</td>
</tr>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
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<tr>
<td>TCC 111</td>
<td>Technical Communications</td>
<td>3</td>
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<tr>
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</table>

Second Semester

<table>
<thead>
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<tbody>
<tr>
<td>AUT 103</td>
<td>Brake Systems</td>
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</tr>
<tr>
<td>AUT 114</td>
<td>Steering and Suspension Systems</td>
<td>4</td>
</tr>
<tr>
<td>AUT 115</td>
<td>Fuel 1 8 II</td>
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<tr>
<td>ENG 112</td>
<td>English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 105</td>
<td>Business Math</td>
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Third Semester

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<tr>
<td>AUT 150</td>
<td>Air Conditioning</td>
<td>2</td>
</tr>
<tr>
<td>AUT 151</td>
<td>Ignition Systems</td>
<td>2</td>
</tr>
<tr>
<td>AUT 152</td>
<td>Computer and Emission Diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>AUT 153</td>
<td>Manual Transmission/Transaxle and Clutches</td>
<td>3</td>
</tr>
<tr>
<td>COMM 100</td>
<td>Introduction to Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>ACC 100</td>
<td>Applied Accounting</td>
<td>3</td>
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<tr>
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### Fourth Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AUT 200</td>
<td>Automotive Automatic Transmission/Transaxle</td>
<td>4</td>
</tr>
<tr>
<td>AUT 121</td>
<td>Engine Performance</td>
<td>3</td>
</tr>
<tr>
<td>AUT 201</td>
<td>Automotive Chassis and Security Systems</td>
<td>2</td>
</tr>
<tr>
<td>AUT 123</td>
<td>Power Train Controls</td>
<td>2</td>
</tr>
<tr>
<td>POL 130</td>
<td>American State and Local Government</td>
<td>3</td>
</tr>
<tr>
<td>CHE 105</td>
<td>Technical Chemistry</td>
<td>3</td>
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</tbody>
</table>

**Total Credits Required:** 65

### Business Management, Associate in Applied Science (BUSM)

The Business Management career program is designed to prepare students for supervisory positions in the retail, manufacturing, and service industries. Students planning to transfer immediately after graduation to pursue a bachelor's degree in management are strongly advised to enroll in the Business Administration program.

Upon successful completion of this program, students should be able to:

- Use terminology common to the business environment to enable effective communication.
- Explore career options in the field of business.
- Use computer application software to create business documents, spreadsheets, databases, and presentations.
- Use the Internet to research and conduct business.
- Interpret financial information used in supervisory positions.
- Employ work methods that foster teamwork within an organization.
- Use established principles of supervision in dealing with supervised employees.
- Analyze the culture and character of the organization in which one is employed.
- Use human relations skills to motivate, train, and develop employees.
- Use legal and ethical standards in dealing with human resources and business resources.

### Fourth Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BUS 243</td>
<td>Legal Environment of Business</td>
<td>3</td>
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<tr>
<td>BUS 246</td>
<td>Teamwork</td>
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<tr>
<td>BUS 199</td>
<td>Co-op/Internship/Business Elective</td>
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<tr>
<td></td>
<td>Business Elective</td>
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<td>Social Science/Humanities Elective</td>
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**Total Credits Required:** 60

### Acceptable Electives:

- ACC 112 Managerial Accounting
- BUS 101 Introduction to International Business
- BUS 102 Introduction to E-Commerce
- BUS 103 Business Processes and Computer Technology
- BUS 110 Sales and Sales Supervision
- BUS 111 International Management
- BUS 149 Small Business Management
- BUS 216 Training & Development
- BUS 217 Compensation & Benefits
- BUS 218 Labor Relations
- BUS 230 Principles of Marketing
- BUS 231 Principles of Advertising
- DPR 111 Advanced Microsoft Office

### Computer-Aided Drafting and Design, Associate in Applied Science (DDT)

Drafting is the common language that scientists, engineers and technicians use to communicate. Accurate and detailed drawings are essential for communication of the concept and application of the designer’s plan, for documenting the production requirements, and for the creation of user's guides, operation and service manuals.

The associate degree in Computer-Aided Drafting and Design (CADD) program provides the student with appropriate knowledge and skill to perform the professional CADD functions required for entry and professional growth in today's modern businesses. Major emphasis is placed on presenting an integrated approach to the development of computer-aided drafting and design knowledge, concepts and skills. Instruction in the use of CADD software applications is presented in parallel with graphic theory and related fundamentals of technical design.

Upon successful completion of the program, students should be able to:

- Use legal and ethical standards in dealing with human resources and business resources.
- Determine a methodology for approaching and solving a design/drafting problem with the aid of freehand sketching and a CADD system.
- Create two- and three-dimensional technical design models and drawings to determine solutions for defined customer problems.
- Apply the principles of descriptive geometry and graphic construction techniques to document a design intent.
- Utilize plane and solid geometric forms, as well as object viewing techniques including photorealistic rendering and animation, to describe and present a design.
- Develop technical designs for a variety of engineering, manufacturing, construction or facility management applications incorporating the use of working, multiview, assembly and solid model drawings.
- Communicate technical information effectively and efficiently in graphic, oral and written form.

The associate degree in applied science will be awarded after satisfactory completion of this four-semester program.
Second Semester

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MAT 111</td>
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<tr>
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<td>Technical Physics I</td>
<td>3</td>
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<td>TCC 121</td>
<td>Project Management Processes</td>
<td>3</td>
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<td>TCC 122</td>
<td>2-D CADD</td>
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<tr>
<td>TDD 128</td>
<td>Detailing, Assembly and Fixture Design</td>
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Third Semester

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<th>Course Title</th>
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<tr>
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<td>PHY 101</td>
<td>Technical Physics II</td>
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<td>TDD 216</td>
<td>Three Dimensional CADD</td>
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<tr>
<td>TME 216</td>
<td>Statics and Strength of Material</td>
<td>4</td>
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<td>Social Sciences Elective</td>
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Fourth Semester

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>TDD 227</td>
<td>Advanced CADD</td>
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<tr>
<td>TME 231</td>
<td>Technical Mechanics (or)</td>
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<tr>
<td>TCS 100</td>
<td>Construction Blueprint Reading</td>
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<tr>
<td>TDD 203</td>
<td>Kinematics (or)</td>
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<tr>
<td>ARC 121</td>
<td>Architectural Graphics I</td>
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<td>TCC 228</td>
<td>Design Project Methods</td>
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<td>TDD 199</td>
<td>Co-op Internship</td>
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</table>

Total Credits Required: 63

*MAT 140, MAT 141 or MAT 160, MAT 161 may be elected instead.

**Construction Management Technology, Associate in Applied Science (CTEC)**

The program in Construction Management is intended to prepare graduates for employment in the construction industry as entry-level assistants to project managers, engineers, field superintendents, estimators, expediters and inspectors. Emphasis is placed on the development of knowledge and skills in modern information systems as they relate to strategic planning and process management, while completing a basic survey of the theory and technology of the construction industry. The program has been designed to meet the needs of a variety of students. These students range from skilled trade workers who seek supervisory or management positions to recent high school graduates beginning a career in the field of Construction Management.

Upon successful completion of this program, students should be able to:
- Interpret construction specifications and drawings.
- Research methods and materials for construction projects under the supervision of an engineer or architect.
- Assemble basic information needed to estimate quantities and costs of construction materials and components.
- Evaluate accurate observations of construction projects for conformance with construction documents.
- Communicate effectively as a member of the construction project team.
- Provide to, and obtain from, the project schedule, information relevant to project management.
- Use contemporary information systems in the context of construction management.

The associate degree in applied science will be awarded after satisfactory completion of the four-semester program.

**First Semester**

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<tr>
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<th>Course Title</th>
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<tr>
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<td>TCC 111</td>
<td>Technical Communication</td>
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<td>TCC 112</td>
<td>Technical Graphics-CADD</td>
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<td>Construction Blueprint Reading</td>
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Second Semester

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<tr>
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<td>*MAT 111</td>
<td>Technical Mathematics II</td>
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<tr>
<td>PHY 100</td>
<td>Technical Physics I</td>
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<td>TCC 122</td>
<td>2-D CADD</td>
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<td>TCS 131</td>
<td>Construction Estimating I</td>
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Third Semester

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<th>Course Title</th>
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<td>PHY 101</td>
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Fourth Semester

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<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>TDD 227</td>
<td>Advanced CADD</td>
<td>3</td>
</tr>
<tr>
<td>TCC 121</td>
<td>Project Management Processes</td>
<td>3</td>
</tr>
<tr>
<td>ARC 121</td>
<td>Architectural Graphics I</td>
<td>3</td>
</tr>
<tr>
<td>TCS 112</td>
<td>Methods/Materials of Construction II</td>
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<tr>
<td>TCS 199</td>
<td>Optional Co-op/Internship</td>
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</table>

Total Credits Required: 60-63

*MAT. 140 and MAT. 141, or MAT. 160 and MAT. 161 may be elected instead.

**Construction Technology Electives**

ARC 226  Mechanical and Electrical Systems in Buildings
TCS 108  Construction Supervision
Prerequisite: TCS 100, or Equivalent experience

TCS 109  Construction Project Administration
Prerequisite: TCS 100 or Equivalent experience
TCS 221  Construction Survey and Layout
Prerequisite: TCS 100, MAT 110

TCS 132  Estimating II
Prerequisite: TCS 100, TCC 111, TCS 131
TCS 141  Construction First Aid/ Safety
TCS 199  Co-op/Internship (Co-Op Experience)
Prerequisite: Completion of 2/3 of program

TME 216  Statics and Strength of Materials
Prerequisite: MAT 110, PHY 100

**Early Childhood Education, Associate in Applied Science (ECE)**

The Early Childhood Education program prepares students to work with young children in a variety of settings that require understanding of how children grow, learn and develop. Such trained personnel are in demand at day care centers, private nursery schools, Head Start centers, Montessori schools, church pre-school programs, public schools, hospitals and therapy centers.

Program emphasis is on working with normal children; however, problems relating to exceptional children, such as gifted, retarded, emotionally disturbed, culturally different and brain injured are considered.

The field experience and practicum (ECE 121,122) provide opportunities for students to become involved in actual work with children and to share experiences with fellow students. In conjunction with class work, students are provided opportunities to observe children and present activities in the College's ECE Lab.

Graduates will be awarded the associate in applied science degree.
Upon successful completion of this program, students should be able to:

- Depict the historical, social, economic and philosophic bases of education in American society.
- Describe the structure and practices of early childhood education in contemporary American society.
- Describe an environment for young children that fosters their acquisition of good health, safety and nutrition.
- Explicate the impact of family, early childhood education center and community in the development of the young child.
- Work effectively with others in an early childhood setting.
- Select and apply age-appropriate materials, equipment and activities for curricula designed to meet the needs of the normal, the culturally different and atypical children.
- Select and apply age-appropriate materials, equipment and activities for curricula designed to meet the needs of the normal, the culturally different and atypical children.
- Employ appropriate child behavior reporting techniques in an early childhood educational setting.
- Design a curriculum consistent with a recognized philosophy of early childhood education.
- Demonstrate attitudes implicit in the commonly accepted principles and practices in early childhood education.
- Manifest a responsible and professional attitude toward career goals.

See Electives Listing, Page 74.

### First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
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<tr>
<td>ECE 100</td>
<td>Principles of Early Childhood Education</td>
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<td>ECE 110</td>
<td>Methods and Materials in Early Childhood Education I</td>
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<tr>
<td>ECE 120</td>
<td>Early Childhood Education Laboratory I</td>
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<td>ECE 130</td>
<td>Early Childhood Development</td>
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### Second Semester

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<tr>
<td>ECE 111</td>
<td>Methods and Materials in Early Childhood Education II</td>
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<tr>
<td>ECE 121</td>
<td>Early Childhood Education Laboratory II</td>
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<tr>
<td>ECE 131</td>
<td>Observing and Recording the Behavior of the Young Child</td>
<td>3</td>
</tr>
<tr>
<td>ECE 140</td>
<td>Curriculum Development, Program Planning and Instruction in Early Childhood Education</td>
<td>3</td>
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### Third Semester

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<tr>
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<td><strong>PSY 140</strong></td>
<td>General Psychology</td>
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<td>ECE 200</td>
<td>Educating the Culturally Different Young Child</td>
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<td><strong>Humanities Elective</strong></td>
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<td><strong>Science or Mathematics Elective</strong></td>
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### Fourth Semester

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<tbody>
<tr>
<td>SOC 180</td>
<td>Sociology of Marriage and the Family</td>
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<tr>
<td>ECE 210</td>
<td>Educating the Exceptional Young Child</td>
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<tr>
<td>EDU 200</td>
<td>Foundations of American Education</td>
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<tr>
<td>ECE 220</td>
<td>Health, Safety, and Nutrition in Early Childhood Education</td>
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<td><strong>Humanities Elective</strong></td>
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</table>

**Total Credits Required: 62-63**

**SOC 110 may be substituted.**

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**Electronic Commerce, Associate in Applied Science (ECM)**

Electronic Commerce is the advertising, selling and buying of products and services—both retail to the consumers, and wholesale, from business to business through the Internet. The program in Electronic Commerce is intended for small business owners and employees of companies that engage in electronic commerce to develop and deploy e-business solutions. The emphasis in the program is on the development of sound business and computer skills to participate in the growing world of electronic commerce. With this focus, the program teaches individuals how to attract people to the Web site, what to do with customers once they are on a Web site, how to provide customer service through the Internet, and how the Web site fits into a company’s larger goals and marketing scheme.

This program combines traditional liberal arts and business courses with hands-on computer skills. Emphasis in the program is on the management, marketing, advertising and legal implications of operating a business that conducts electronic commerce.

Upon successful completion of this program, students should be able to:

- Discuss electronic commerce concepts and practices.
- Identify terms used in electronic commerce and related technologies.
- Discuss the global impact of electronic commerce on business.
- Develop and maintain a web page to market a product or service.
- Apply business principles to electronic commerce.
- Use computer software and applications to enhance business operations.
- Develop a supply chain strategy for a business operation.
- Discuss the legal, political and ethical issues associated with an international business that engages in electronic commerce.
- Develop a marketing plan for a business engaged in electronic commerce.

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 100</td>
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<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
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<td>MATH 105</td>
<td>Business Mathematics</td>
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<td>DPR 100</td>
<td>Introduction to Information Technology</td>
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<tbody>
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<tr>
<td>BUS 102</td>
<td>Introduction to Electronic Commerce</td>
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<tr>
<td>IMM 100</td>
<td>Interface Design Using Director</td>
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<td>BUS 210</td>
<td>Principles of Management</td>
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<tr>
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<td>Data Base Management Systems</td>
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<tbody>
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<td>IMM 120</td>
<td>Web Page Development</td>
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<td>BUS 243</td>
<td>Legal Environment of Business</td>
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<td>BUS 234</td>
<td>Electronic Marketing</td>
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<td>DPR 105</td>
<td>Management Information Systems</td>
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<td>IMM 122</td>
<td>Programming the Web</td>
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</table>

**Total Credits Required: 61**

A certificate program is also available. See page 61.
Electronics Technology, Associate in Applied Science (ETEC)

The associate degree in Electronics Technology prepares students for employment as electronic technicians who work on a variety of highly specialized electronics equipment and products from the original manufacturer to the final user. This work may include design, construction, testing, installation, maintenance and repair.

Upon successful completion of this program, students should be able to:
- Identify malfunctions in electrical and electro-mechanical instruments.
- Repair non-functioning electrical and electro-mechanical instruments.
- Calibrate scientific and industrial instruments.
- Use established maintenance procedures for scientific and industrial instruments.
- Test input/output parameters of electrical/mechanical devices.
- Identify electrical/electro-mechanical devices.
- Assemble electrical and electro-mechanical devices.
- Identify electrical/electro-mechanical components, devices or systems in accordance with predetermined specifications.
- Present technical information in oral, written and graphic form, including use of microcomputers to manipulate content and access information.

The associate degree in applied science will be awarded after satisfactory completion of the four-semester program.

### First Semester

<table>
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<tr>
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<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
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<td>DC Analysis</td>
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**Total Credits Required: 17**

### Second Semester

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<td>Technical Physics I</td>
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<td>TEL 110</td>
<td>Electronics I</td>
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<td>TEL 121</td>
<td>Digital Electronics</td>
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<tr>
<td>ENG 112</td>
<td>English Composition II</td>
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**Total Credits: 18**

### Third Semester

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<td>AC Analysis</td>
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<tr>
<td>TEL 111</td>
<td>Electronics II</td>
<td>4</td>
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<tr>
<td>TEL 200</td>
<td>Electro/Mechanical Systems</td>
<td>3</td>
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<tr>
<td>TEL 210</td>
<td>Troubleshooting and Repair</td>
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<tr>
<td>PHY 101</td>
<td>Technical Physics II</td>
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**Total Credits: 18**

### Fourth Semester

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<td>TEL 124</td>
<td>Microprocessors I</td>
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<td>SCI 105</td>
<td>Introduction to Nanotechnology</td>
<td>3</td>
</tr>
<tr>
<td><strong>M</strong> 100</td>
<td>Introduction to Interpersonal Communi</td>
<td>3</td>
</tr>
<tr>
<td>TEL 199</td>
<td>Co-op Internship or Technical Electi</td>
<td>3</td>
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<td>Social Science Elective</td>
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</tr>
</tbody>
</table>

**Total Credits: 15**

*MAT 140, MAT 141 or MAT 160, MAT 161 may be elected instead.

Emergency Management and Planning, Associate in Applied Science

The Emergency Management and Planning associate degree program is designed for individuals who are seeking careers that are related to management of emergency and catastrophic situations that are accidental, provoked or natural disasters. The primary focus of the program is to provide an educational vehicle and skill set for first responder professionals such as Firefighters, Law Enforcement Officers or Medical First Responders to approach emergency situations in a uniform fashion. The technical core of the program focuses on the knowledge and skills required to effectively manage and mitigate emergency and disaster incidents. Individuals employed in the private sector as safety officers or security professionals can also develop and strengthen their skills and effectiveness by completing this program. The competencies and course content has been developed with significant consideration of the coursework developed by the Federal Emergency Management Agency (FEMA), state emergency management agencies and local emergency planning committees.

Upon successful completion of this program, students should be able to:
- Demonstrate skills as a first responder in fire fighting, law enforcement or medical responders.
- Implement principles and best practices in incident management.
- Develop plans and procedures for dealing with various emergency situations.
- Identify the dangers associated with various emergency situations and apply the proper safety procedures for oneself and the public at large.
- Recognize the role of fellow first responders in emergency situations.
- Explain the psychology of terrorism. Implement appropriate procedures in dealing with terrorism threats, and incidents.
- Perform procedures and protocol for search and rescue operations.
- Communicate procedures effectively to mitigate emergency situations with first responder colleagues.
- Employ critical thinking and problem solving techniques relevant to emergency situations.

Students must select one of the concentrations below for the Emergency Management and Planning degree.

#### Fire Science Concentration (EMF)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FST 100</td>
<td>Introduction to Fire Protection</td>
<td>3</td>
</tr>
<tr>
<td>FST 101</td>
<td>Principles of Fire Administration</td>
<td>3</td>
</tr>
<tr>
<td>FST 102</td>
<td>Fire Prevention Theory and Application</td>
<td>3</td>
</tr>
<tr>
<td>FST 103</td>
<td>Fire Investigation</td>
<td>3</td>
</tr>
<tr>
<td>FST 200</td>
<td>Fire Operations Strategies</td>
<td>3</td>
</tr>
<tr>
<td>FST 201</td>
<td>Fire Protection in Building Construction</td>
<td>3</td>
</tr>
<tr>
<td>FST 202</td>
<td>Fire Protection Systems in Industry</td>
<td>3</td>
</tr>
<tr>
<td>FST 220</td>
<td>Seminar Fire Science</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits: 24**

#### Municipal Police Officer Concentration (EMP)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPT 100</td>
<td>Introduction to Law Enforcement</td>
<td>2</td>
</tr>
<tr>
<td>MPT 101</td>
<td>Professional Development</td>
<td>4</td>
</tr>
<tr>
<td>MPT 102</td>
<td>Law &amp; Procedures I</td>
<td>3</td>
</tr>
<tr>
<td>MPT 103</td>
<td>Law &amp; Procedures II</td>
<td>3</td>
</tr>
<tr>
<td>MPT 106</td>
<td>Patrol Procedures &amp; Operations</td>
<td>3</td>
</tr>
<tr>
<td>MPT 107</td>
<td>Principles of Criminal Investigation</td>
<td>3</td>
</tr>
<tr>
<td>MPT 200</td>
<td>Human Relations</td>
<td>2</td>
</tr>
<tr>
<td>MPT 202</td>
<td>Crisis Management</td>
<td>2</td>
</tr>
<tr>
<td>MPT 206</td>
<td>Report Writing/Case Preparation</td>
<td>2</td>
</tr>
<tr>
<td>MPT 207</td>
<td>Emergency Response Training</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits: 27**
Facility Management Technology, Associate in Applied Science (FTEC)

Most large corporate enterprises have individuals within their organizational structure charged with the duties of planning and operating the physical facility that houses the organization and its operations. For many companies, these facilities are the largest part of the corporate assets, and their management has become a critical corporate function. There is a growing recognition of the need for sophisticated skills and knowledge in performing this function. Today, the field of facility management is an emerging profession.

These courses give the curriculum a flexible component that allows entry-level students to pursue a specific area of specialization and allows practitioners to strengthen areas in their professional experience.

Facility Management Electives

Facility Management elective courses are an important part of the program. These courses give the curriculum a flexible component that allows entry-level students to pursue a specific area of specialization and allows practitioners to strengthen areas in their professional experience.

<table>
<thead>
<tr>
<th>Course Offering by Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
</tr>
<tr>
<td>ENG 100 English Composition I</td>
</tr>
<tr>
<td>EMER 105 Incident Management</td>
</tr>
<tr>
<td>ESS 100 Earth Science</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
</tr>
<tr>
<td>ENG 112 English Composition II</td>
</tr>
<tr>
<td>EMER 110 Emergency Planning</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Third Semester</strong></td>
</tr>
<tr>
<td>EMER 120 Leadership and Influence in Emergency Response</td>
</tr>
<tr>
<td>EMER 130 Search and Rescue</td>
</tr>
<tr>
<td>MAT 100 Intermediate Algebra</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Fourth Semester</strong></td>
</tr>
<tr>
<td>EMER 140 Seminar in Emergency Management</td>
</tr>
<tr>
<td>Elective (choose from DPR, BUS or ACC)</td>
</tr>
<tr>
<td>ADJ 202 Terrorism: History, Threat and Response</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Total Credits Required: 60-64**

Facility Management Electives

- Understand and demonstrate knowledge of various materials and systems of building operation and construction.
- Utilize computer systems for communication in technical drafting and documentation, project planning and management.
- Discuss basic principles of law and real estate practice in applications of facility management.
- Communicate with clarity and organization in a facility management environment, both orally and in writing.
- Apply basic knowledge and skills of facility management in the investigation and resolution of facility management problems requiring critical analysis.

<table>
<thead>
<tr>
<th>Course Offering by Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
</tr>
<tr>
<td>ENG 100 English Composition I</td>
</tr>
<tr>
<td>MAT 110 Technical Mathematics I</td>
</tr>
<tr>
<td>TCC 111 Technical Communication</td>
</tr>
<tr>
<td>TCC 112 CADD Graphics</td>
</tr>
<tr>
<td>TCS 100 Construction Blueprint Reading</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
</tr>
<tr>
<td>MAT 111 Technical Mathematics II</td>
</tr>
<tr>
<td>PHY 100 Technical Physics I</td>
</tr>
<tr>
<td>TCC 121 Project Management Processes</td>
</tr>
<tr>
<td>TCC 122 2-D CADD</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Third Semester</strong></td>
</tr>
<tr>
<td>ENG 112 English Composition II</td>
</tr>
<tr>
<td>PHY 101 Technical Physics II</td>
</tr>
<tr>
<td>TCS 111 Methods/Materials of Construction I</td>
</tr>
<tr>
<td>BUS 243 Legal Environment of Business</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Fourth Semester</strong></td>
</tr>
<tr>
<td>TCS 112 Methods/Materials of Construction II</td>
</tr>
<tr>
<td>ARC 226 Mechanical and Electrical Systems in Buildings</td>
</tr>
<tr>
<td>PLG 220 Real Estate Law</td>
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</table>

**Total Credits Required: 62**

MAT 140, MAT 141 or MAT 160, MAT 161 may be elected instead.

Emergency Medical Technician Concentration (EMM)

<table>
<thead>
<tr>
<th>Course Offering by Semester</th>
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<tbody>
<tr>
<td><strong>Credit Course Total</strong></td>
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<tr>
<td><strong>Emergency Medical Technician Concentration (EMM)</strong></td>
</tr>
<tr>
<td>Allied Health Electives (EMS, AHN, AHM, or NUS)</td>
</tr>
<tr>
<td>EMT 120 Airway Management and Ventilation</td>
</tr>
<tr>
<td>AHN 106 Patient Care Assisting Techniques</td>
</tr>
<tr>
<td>BIO 150 Human Anatomy and Physiology I</td>
</tr>
<tr>
<td>BIO 151 Human Anatomy and Physiology II</td>
</tr>
<tr>
<td>NUS 102 Math for Nurses</td>
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</table>

<table>
<thead>
<tr>
<th>Course Offering by Semester</th>
</tr>
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<tbody>
<tr>
<td><strong>Course Offering by Semester</strong></td>
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<tr>
<td><strong>First Semester</strong></td>
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</tr>
<tr>
<td>ENG 112 English Composition II</td>
</tr>
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<td>EMER 110 Emergency Planning</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Third Semester</strong></td>
</tr>
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<td>EMER 120 Leadership and Influence in Emergency Response</td>
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<td>EMER 130 Search and Rescue</td>
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<tr>
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<tr>
<td>EMER 140 Seminar in Emergency Management</td>
</tr>
<tr>
<td>Elective (choose from DPR, BUS or ACC)</td>
</tr>
<tr>
<td>ADJ 202 Terrorism: History, Threat and Response</td>
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**Total Credits Required: 60-64**

**Facility Management Electives**

- Understand and demonstrate knowledge of various materials and systems of building operation and construction.
- Utilize computer systems for communication in technical drafting and documentation, project planning and management.
- Discuss basic principles of law and real estate practice in applications of facility management.
- Communicate with clarity and organization in a facility management environment, both orally and in writing.
- Apply basic knowledge and skills of facility management in the investigation and resolution of facility management problems requiring critical analysis.

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<tr>
<td></td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td><strong>Third Semester</strong></td>
</tr>
<tr>
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<tr>
<td>PHY 101 Technical Physics II</td>
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<tr>
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<tr>
<td>BUS 243 Legal Environment of Business</td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Fourth Semester</strong></td>
</tr>
<tr>
<td>TCS 112 Methods/Materials of Construction II</td>
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<td>ARC 226 Mechanical and Electrical Systems in Buildings</td>
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<td>PLG 220 Real Estate Law</td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

**Total Credits Required: 62**

MAT 140, MAT 141 or MAT 160, MAT 161 may be elected instead.

**Facility Management Electives**

- Understand and demonstrate knowledge of various materials and systems of building operation and construction.
- Utilize computer systems for communication in technical drafting and documentation, project planning and management.
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- Communicate with clarity and organization in a facility management environment, both orally and in writing.
- Apply basic knowledge and skills of facility management in the investigation and resolution of facility management problems requiring critical analysis.
General Business, Associate in Applied Science (BGEN)

The associate degree program in General Business is intended for the student who wants to explore the many areas of business to determine a future career path. The program provides students with necessary required courses in general education and business, which provide a basic understanding of the world of business. Students can design their own curriculum to meet their long-term career objectives.

Upon successful completion of this program, students should be able to:
- Determine a career path they want to follow in business.
- Record terminology common to business.
- Discuss the factors that influence business in the domestic environment.
- Use software common to business for word processing, spreadsheets, presentations, research, and database management.
- Discuss concepts of management, marketing, human resource management, finance, sales, and international business.

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
</tr>
<tr>
<td>MATH 105</td>
<td>*Business Mathematics</td>
</tr>
<tr>
<td>DPR 100</td>
<td>Introduction to Information Technology</td>
</tr>
<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
</tr>
<tr>
<td></td>
<td>Social Science Elective</td>
</tr>
<tr>
<td></td>
<td>15</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 112</td>
<td>English Composition II</td>
</tr>
<tr>
<td>ACC 100</td>
<td>Applied Accounting (or)</td>
</tr>
<tr>
<td>ACC 111</td>
<td>Financial Accounting</td>
</tr>
<tr>
<td></td>
<td>Social Science/Humanities Elective</td>
</tr>
<tr>
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<td>15</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 130</td>
<td>Business Communications</td>
</tr>
<tr>
<td></td>
<td>Science Elective</td>
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<td>15</td>
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<table>
<thead>
<tr>
<th>Fourth Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 225</td>
<td>Professional Development</td>
</tr>
<tr>
<td></td>
<td>Humanities Elective</td>
</tr>
<tr>
<td></td>
<td>ACC/BUS/DPR Elective</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Recommended ACC/BUS/DPR Electives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 112</td>
<td>Managerial Accounting</td>
</tr>
<tr>
<td>ACC 115</td>
<td>Computerized Accounting</td>
</tr>
<tr>
<td>ACC 201</td>
<td>Introduction to Cost Accounting</td>
</tr>
<tr>
<td>ACC 202</td>
<td>Introduction to Tax Accounting</td>
</tr>
<tr>
<td>BUS 101</td>
<td>Introduction to International Business</td>
</tr>
<tr>
<td>BUS 102</td>
<td>Introduction to Electronic Commerce</td>
</tr>
<tr>
<td>BUS 110</td>
<td>Sales and Sales Supervision</td>
</tr>
<tr>
<td>BUS 149</td>
<td>Small Business Management</td>
</tr>
<tr>
<td>BUS 210</td>
<td>Principles of Management</td>
</tr>
<tr>
<td>BUS 215</td>
<td>Human Resource Management</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Principles of Marketing</td>
</tr>
<tr>
<td>BUS 221</td>
<td>Principles of Advertising</td>
</tr>
<tr>
<td>BUS 232</td>
<td>Principles of Finance</td>
</tr>
<tr>
<td>BUS 233</td>
<td>Financial Planning</td>
</tr>
<tr>
<td>BUS 243</td>
<td>Legal Environment of Business</td>
</tr>
<tr>
<td>DPR 105</td>
<td>Management Information Systems</td>
</tr>
<tr>
<td>DPR 109</td>
<td>Introduction to Computer Science</td>
</tr>
<tr>
<td>DPR 111</td>
<td>Advanced Microsoft Office</td>
</tr>
</tbody>
</table>

Total Credits Required: 60

Other ACC/BUS/DPR courses may be taken with the approval of the Dean, Business/Computer Information Systems

*A higher-level mathematics course may be substituted.

General Studies, Associate in Applied Science (GEN)

The General Studies program is designed for those students who wish to broaden their cultural backgrounds, improve their effectiveness as citizens and parents, and increase their knowledge and understanding of the world in which they live.

Through the General Studies program, students are exposed to meaningful experiences that will assist them in developing special interests. When the students' interests become focused on a specific goal, they can make a smooth transition to a specific program.

Students who successfully complete 60 hours of recommended courses will receive the associate in applied science degree.

See Electives Listing, Page 74

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
</tr>
<tr>
<td></td>
<td>Mathematics or Science Elective</td>
</tr>
<tr>
<td></td>
<td>Social Science Elective</td>
</tr>
<tr>
<td></td>
<td>Open Elective</td>
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<tr>
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<td>15-16</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 112</td>
<td>English Composition II</td>
</tr>
<tr>
<td></td>
<td>199 Co-op Internship or Open Elective</td>
</tr>
<tr>
<td></td>
<td>Mathematics or Science Elective</td>
</tr>
<tr>
<td></td>
<td>History or Political Science Elective</td>
</tr>
<tr>
<td></td>
<td>15-16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third and Fourth Semesters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses will be selected with the aid of the faculty advisor to assure a well-rounded program. It is recommended that 18 of the 60 credits required for the degree be taken in a single field of concentration. Students in this program may elect to take three or six credits through the Co-op/Internship Program (CSEL). They will be advised by the program director through their advisor regarding the semesters during which these credits may best be scheduled.</td>
</tr>
<tr>
<td>Total Credits Required: 60</td>
</tr>
</tbody>
</table>
Graphic Design, Associate in Applied Science (CART)

Graphic design is the aesthetic arrangement of type and image in order to inform, educate, persuade or sell. Graphic designers plan and produce visual solutions to client problems within the constraints of time, budget and technology. These solutions usually include printed or digital materials such as books, magazines, newspapers, brochures, letterheads, logo systems, posters, presentations and Web pages. The associate degree program in graphic design prepares students for positions in this field, such as entry-level designer, freelance designer, and print production artist.

Although the program is not designed for transfer, students who intend to continue their education may transfer to four-year studio art or design programs. Additional courses may be required to enter transfer institutions at the sophomore or junior level.

Any remediation in reading, English or mathematics must be completed before beginning third semester courses. First-year requirements must be satisfied before beginning second-year course work. Incoming students are required to attain a satisfactory score on a Macintosh computer proficiency assessment test.

Upon successful completion of this program, students should be able to:

- Demonstrate effective use of the basic tools and techniques of the graphic designer.
- Communicate in an effective and professional manner both verbally and in writing.
- Compute mathematically on a level that will allow for the solution of common design problems.
- Demonstrate the ability to meet deadlines and incorporate critique recommendations in the work.
- Use computer technology in the execution of design projects.
- Produce a portfolio demonstrating the ability to solve design problems.

The degree of associate in applied science is awarded upon successful completion of the graphic design course sequence with a grade of "C" (2.0 GPA) or better in all GRA courses. A GRA course with a grade lower than "C" must be repeated.

The faculty advisor may approve the Co-op/Internship as additional credits beyond the 66 curriculum credit requirement.

First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRA 133</td>
<td>Drawing I for Graphic Design Majors</td>
<td>3</td>
</tr>
<tr>
<td>GRA 122</td>
<td>Two-Dimensional Design</td>
<td>3</td>
</tr>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>ART 110</td>
<td>Art History I (or)</td>
<td>3</td>
</tr>
<tr>
<td>ART 111</td>
<td>Art History II (or)</td>
<td>3</td>
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<tr>
<td>GRA 110</td>
<td>History of Graphic Design</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Social Science Elective</td>
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<tr>
<td></td>
<td></td>
<td>18</td>
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</table>

Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRA 134</td>
<td>Drawing II for Graphic Design Majors</td>
<td>3</td>
</tr>
<tr>
<td>GRA 136</td>
<td>Drawing as Design Process</td>
<td>3</td>
</tr>
<tr>
<td>GRA 123</td>
<td>Color and Design</td>
<td>3</td>
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<tr>
<td>GRA 121</td>
<td>Three-Dimensional Design</td>
<td>3</td>
</tr>
<tr>
<td>GRA 208</td>
<td>Computer Illustration</td>
<td>3</td>
</tr>
<tr>
<td>GRA 211</td>
<td>Digital Imaging</td>
<td>3</td>
</tr>
<tr>
<td>ENG 112</td>
<td>English Composition II</td>
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</tbody>
</table>

Total Credits Required: 66

Health Care Management, Associate in Applied Science (AHM)

The Health Care Management curriculum prepares students for management roles in a health care environment that is rapidly changing from one focused on episodes of treatment for acute disease to lifelong health maintenance and wellness promotion. The program is intended for health care workers who need new knowledge and skills to compete in the changing health care marketplace. It will also be useful for those individuals with no previous health care experience who seek non-clinical entry-level positions in health care, or who plan to continue their education in the field of health care administration.

Upon successful completion of this program, students should be able to:

- Demonstrate principles, terminology, structure and products of health care management.
- Describe emerging health care delivery systems and their impact on delivery, financing, practice patterns and the utilization of personnel and services.
- Explain the priorities of managing risk, quality improvement and measuring outcomes.
- Assess issues and trends in health care management.
- Develop skills for coordination of care and services in managed care settings.
- Analyze the health care delivery system as a multidisciplinary, multilayered entity with a variety of entry and access points along a continuum of care.
- Function within an ethical and legal framework appropriate for a managed care environment.
- Develop personal qualities needed to function effectively with individuals and organizations.
- Demonstrate proficiency in computer applications used in a health care environment.
- Apply economic and business practices to the health care setting.

An associate degree in applied science will be awarded upon completion of the required program with a 2.0 GPA and a "C" or better in all Allied Health courses.

First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
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<tr>
<td>&quot;MATH 115&quot;</td>
<td>Business Math</td>
<td>3</td>
</tr>
<tr>
<td>SOC 110</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>DPR 100</td>
<td>Information to Technology</td>
<td>3</td>
</tr>
<tr>
<td>AHM 100</td>
<td>Orientation to Health Care</td>
<td>3</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
Second Semester
AHM 233 Medical Terminology ........................................ 3
AHM 140 Professional and Communication Issues in Health Care ........................................ 3
COM 100 Introduction to Interpersonal Communication (or) ........................................ 3
BUS 130 Business Communications ........................................ 3
BUS 100 Introduction to Business ........................................ 3
ENG 112 English Composition II ........................................ 3

Third Semester
BUS 211 Supervision ........................................ 3
BUS 230 Principles of Marketing ........................................ 3
AHM 130 Medical Coding Concepts for Allied Health ........................................ 3
AHA 207 Ethical/Legal Aspects of Health Care Management ........................................ 3
AHA 207 AHM/BUS Elective ........................................ 3

Fourth Semester
AHA 209 Philosophy of Managed Care ........................................ 3
AHA 210 Outcomes Measurement and Management ........................................ 3
AHA 206 Reimbursement and Financing Methods ........................................ 3
AHA 217 Quality Improvement and Accreditation Process ........................................ 3
AHA 213 Managing Utilization and Risk ........................................ 3

Total Credits Required: 60
**MAT 130 may be selected instead.
A Certificate of Competency in Managed Care is also available. Enrollment is limited to health care professionals.

Advanced-Standing Core
Nine to fifteen credits for the Allied Health core maybe awarded for previous education, training and work experience in an allied health field through credit for prior learning. Examples might include, but are not limited to: medical assistant, physician assistant, medical technology, nursing, respiratory therapy, medical secretary, health unit coordination, surgical technology, dietitian, radiation technology, etc.

Students may be asked to take one or two courses within this core based on portfolio assessment.

Students with previous health care experience may NOT be required to take some or all of the following courses:
AHM 233 Medical Terminology
AHM 100 Orientation to Health Care
AHA 207 Ethical/Legal Aspects of Health Care Management
AHM 140 Professional and Communication Issues in Health Care

Health Studies, Associate in Applied Science General Options (HSTU)
The Associate of Applied Science in Health Studies is designed to offer students interested in working within the health care field an opportunity to attain the associate degree. Students acquiring this degree would be able to pursue advancement opportunities within varied health care settings. This program is especially advantageous for students who have completed certificates of competency and proficiency programs offered by the Allied Health and Nursing department and wish to complete a degree course of study. The program offers a broad view of health care related topics while providing a basic liberal studies foundation.

Employment settings are varied and include hospitals and health networks, health and wellness organizations, physician's offices, insurance companies, nursing and residential care facilities and educational institutions. Examples of positions that would be applicable include: Billing Supervisor, Patient Service Representative, Medical Administrative Assistant, Medical Supply Manager, and Allied Health Instructor.

An Associate of Applied Science will be awarded upon completion of the Health Studies curriculum with a 2.0 GPA and a "C" or better in all Allied Health (AH) courses.

Upon successful completion of this program, students should be able to:
  • Describe the terminology and bio-psycho-social foundations related to the function of the human body.
  • Discuss the bio-psycho-social and economic principles that guide and govern health care delivery systems.
  • Demonstrate the analytic and reasoning qualities necessary to function effectively in health care settings.
  • Utilize skills and knowledge related to proficiency in health care computer applications.
  • Analyze the ethical and legal issues related to health care.
  • Explain aspects of factors related to current trends in health care management and delivery.
  • Advance personal career paths and interests related to employment in health care.
  • Communicate effectively and appropriately in oral and written exchanges.

First Semester Credits
ENG 100 English Composition I ........................................ 3
DPR 100 Introduction to Information Technology ........................................ 3
AHM 100 Orientation to Health Care ........................................ 3
AHM 233 Medical Terminology ........................................ 3
*BIO 100 Biological Science ........................................ 4

Second Semester
ENG 112 English Composition II ........................................ 3
SOC 110 Introduction to Sociology ........................................ 3
AHM 140 Professional and Communication Issues in Health Care ........................................ 3
** Humanities Elective ........................................ 3
** Open Elective ........................................ 3

Third Semester
AHM 104 Body Structure/Function I (or) ........................................ 3
BIO 150 Human Anatomy and Physiology I ........................................ 4
AHA 207 Ethical/Legal Aspects of Health Care Management ........................................ 3
MAT 120 Modern College Math ........................................ 3
** Allied Health Elective ........................................ 3
** Social Science Elective ........................................ 3
15-16

Fourth Semester
AHM 105 Body Structure/Function II (or) ........................................ 3
BIO 151 Human Anatomy and Physiology II ........................................ 4
PSY 140 General Psychology ........................................ 3
AHA 209 Philosophy of Managed Care ........................................ 3
BIO 220 Nutrition and Well-Being ........................................ 3
** Open Elective or Co-op/Internship ........................................ 3
15-16

Total Credits Required: 60 – 62
*Humanities elective include: Any courses listed as ART, DRA, ENG 113 or above, FRE, HUM, ITA, MUS, PHI, SPA, SPE.
**AH elective include: Courses listed as AHM, AHN, AHS, AHU, RTH (must be a skills course related to clinical or administrative responsibilities)
***Social Science electives: Any course listed as HIS, POL, ECO, PSY (above 140) or SOC (above 110)
• For students holding external certificates who wish to transfer credits to this program Natural Science electives will satisfy these credit requirements.
### Pre-Nursing Option (HSTN)

(All students interested in nursing at DCCC should follow this course schedule)

#### First Semester

<table>
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<th>Credits</th>
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<tr>
<td>ENG 100</td>
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<tr>
<td>BIO 150</td>
<td>Human Anatomy and Physiology I</td>
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<tr>
<td>PSY 140</td>
<td>General Psychology</td>
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<td>SOC 110</td>
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#### Second Semester

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<tr>
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<td>English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>BIO 151</td>
<td>Human Anatomy Physiology II</td>
<td>4</td>
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<tr>
<td>PSY 220</td>
<td>Abnormal Psychology</td>
<td>3</td>
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<tr>
<td>PSY 210</td>
<td>Lifespan Human Development</td>
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**Nursing Students**

Students accepted into DCCC’s Nursing program who have completed all of the above courses will need to complete 41 additional credits in nursing coursework (below) to complete the Associate of Applied Science in Nursing.

#### Fall Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>NUS 110</td>
<td>Fundamentals of Nursing</td>
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#### Spring Semester

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#### Fall Semester

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#### Spring Semester

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<tr>
<td>NUS 211</td>
<td>Nursing Concepts and Practices III</td>
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</table>

**Health Studies Students (2nd year)**

**Students not accepted into the Nursing program who opt to complete the Associate of Applied Science in Health Studies (HSTN) can do so by completing the following two semesters.**

#### Third Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>DPR 100</td>
<td>Introduction to Information Technology</td>
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<tr>
<td>AHM 100</td>
<td>Orientation to Health Care</td>
<td>3</td>
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<tr>
<td>AHM 233</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>BIO 100</td>
<td>Biological Science</td>
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#### Fourth Semester

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<tr>
<td>AHM 140</td>
<td>Professional and Communication Issues in Health Care</td>
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<tr>
<td>AHA 207</td>
<td>Ethical/Legal Aspects of Health Care Management</td>
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<tr>
<td>MAT 120</td>
<td>Modern College Mathematics I</td>
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<tr>
<td>AHA 209</td>
<td>Philosophy of Managed Care</td>
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<tr>
<td>BIO 220</td>
<td>Nutrition and Well Being</td>
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<td>Allied Health Elective</td>
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</table>

*Health Studies students must take one social science elective and one humanities elective.

*Students not accepted into DCCC nursing program who decide to transfer to a BSN program may change major to HSCI for 2nd year.

### Heating, Ventilation, Air Conditioning and Refrigeration, Associate in Applied Science (HVAC)

The associate degree in Heating, Ventilation, Air Conditioning and Refrigeration prepares students for employment as HVAC&R technicians who work on a variety of equipment and products. This work may include installation, maintenance and repair of various types of climate control units. The Delaware Valley chapter of The Air Conditioning Contractors of America (ACCA) has joined with the College to develop this program. The goal is to provide an educational program for current technicians, and for the basic preparation of individuals seeking entry to this field.

Upon successful completion of this program, students should be able to:

- Identify and explain the functions of components in residential and light commercial HVAC&R equipment.
- Describe the cycle of operation of residential and light commercial HVAC&R equipment.
- Interpret wiring diagrams and building blueprints.
- Perform specific installation and start-up procedures to insure operational efficiency and safety of HVAC&R equipment.
- Diagnose trouble in operating safety controls.
- Cite the procedures of heat loss and heat gain load calculations.
- Identify how to handle refrigerant and detail potential environmental hazards of fluorocarbons.
- Detail the techniques of servicing equipment and start-up to develop service ability with hands-on experience.
- Detail duct fabrication and installation in residential and light commercial buildings.
- Describe the operation of hydronic and oil burner systems.
- Diagnose trouble in hydronic and oil burner systems.
- Cite procedures for servicing gas and oil heating systems.

#### First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>HVA 100</td>
<td>Introduction to Heating, Ventilating,</td>
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<tr>
<td></td>
<td>Air Conditioning and Refrigeration Electrical Fabrication</td>
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<tr>
<td>HVA 101</td>
<td>Introduction to Refrigeration and Air Conditioning</td>
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<tr>
<td>HVA 104</td>
<td>Practical Math for HVAC</td>
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<tr>
<td>HVA 106</td>
<td>Basic Piping for Contractors</td>
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<td>HVA 201</td>
<td>Refrigerant Certification</td>
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<tr>
<td>HVA 202</td>
<td>Oil/Gas Burner Service</td>
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<tr>
<td>ENG 100</td>
<td>English Composition I</td>
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#### Second Semester

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<tbody>
<tr>
<td>HVA 103</td>
<td>Advanced Refrigeration and Air Conditioning</td>
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<td>HVA 200</td>
<td>Advanced HVAC Electrical Fabrication</td>
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<td>HVA 107</td>
<td>Gas Heating</td>
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<tr>
<td>HVA 108</td>
<td>Duct and Sheet Metal Fabrication and Installation-Residential</td>
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<tr>
<td>MAT 110</td>
<td>Technical Mathematics I</td>
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<td>Heat Pump Systems</td>
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<tr>
<td>HVA 112</td>
<td>Oil Burner and Hydronic Steam Heating</td>
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</tr>
<tr>
<td>HVA 111</td>
<td>Advanced Duct and Sheet Metal Fabrication/Installation-Commercia</td>
<td>3</td>
</tr>
<tr>
<td>HVA 110</td>
<td>Hydronic Heating Systems</td>
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<tr>
<td>MAT 111</td>
<td>Technical Mathematics II</td>
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<tr>
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</tbody>
</table>
### Hotel and Restaurant Management, Associate in Applied Science (HRM)

The Hotel/Restaurant Management program is designed for individuals seeking specialized training as preparation for a career in the vast hospitality industry. Hotel and Restaurant Management graduates can enter the industry at a supervisory level and perform certain management functions and duties. Upon successful completion of this program, students should be able to:

- Choose from a wide variety of career options in the hotel/restaurant management field.
- Use terminology specific to the hotel/restaurant/food service industry.
- Supervise the operations of a front desk in a hotel or motel.
- Apply federal, state, and local laws and regulations that are specific to the hotel and restaurant industry.
- Be certified in food handling sanitation.
- Prepare a wide variety of foods typically served in a hotel, restaurant, or food service establishment.
- Plan, prepare, serve and cost a meal for a group.
- Use accepted accounting practices to prepare reports, spreadsheets, and presentations.
- Apply human resource management principles in dealing with employees.

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>ENG 100</strong> <em>English Composition I</em></td>
<td>3</td>
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<tr>
<td><strong>MATH 105</strong> <em>Business Math</em></td>
<td>3</td>
</tr>
<tr>
<td><strong>DPR 100</strong> <em>Introduction to Information Technology</em></td>
<td>3</td>
</tr>
<tr>
<td><strong>HRM 100</strong> <em>Introduction to Hospitality</em></td>
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<tr>
<td><strong>HRM 110</strong> <em>Food Handler Sanitation</em></td>
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<tr>
<td><strong>SOC 110</strong> <em>Introduction to Sociology (or)</em></td>
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<tr>
<td><strong>PSY 140</strong> <em>General Psychology</em></td>
<td>3</td>
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<tbody>
<tr>
<td><strong>ENG 112</strong> <em>English Composition II</em></td>
<td>3</td>
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<tr>
<td><strong>ACC 100</strong> <em>Applied Accounting (or)</em></td>
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<tr>
<td><strong>ACC 111</strong> <em>Financial Accounting</em></td>
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<tr>
<td><strong>HRM 150</strong> <em>Professional Cooking I</em></td>
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<tr>
<td><strong>HRM 155</strong> <em>Front Office Management</em></td>
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<tr>
<td><strong>HRM 162</strong> <em>Laws of Innkeepers</em></td>
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<tbody>
<tr>
<td><strong>BUS 130</strong> <em>Business Communications</em></td>
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<tr>
<td><strong>BUS 110</strong> <em>Sales and Sales Supervision (or)</em></td>
<td>3</td>
</tr>
<tr>
<td><strong>BUS 230</strong> <em>Principles of Marketing</em></td>
<td>3</td>
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<tr>
<td><strong>HRM 151</strong> <em>Professional Cooking II</em></td>
<td>3</td>
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<tr>
<td><strong>HRM 253</strong> <em>Food Service Management</em></td>
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<td><strong>HRM 199</strong> <em>Co-op Internship or HRM Elective</em></td>
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<tbody>
<tr>
<td><strong>BUS 215</strong> <em>Human Resource Management</em></td>
<td>3</td>
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<tr>
<td><strong>HRM 254</strong> <em>Quantity Food and Catering</em></td>
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<tr>
<td><strong>HRM 199</strong> <em>Co-op Internship or HRM Elective</em></td>
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### Industrial Systems Technology (ISTD)

The associate degree in Industrial Systems Technology prepares students for employment as Industrial Systems and Maintenance Technicians with responsibility for installing, maintaining, troubleshooting, repairing and/or replacing a variety of equipment in a manufacturing environment. Specific topics of coverage will include fluid power and controls, gears and belt-drive systems, conveyors, and programmable logic controls and process control. Industrial Systems Technicians work directly with engineers, designers and plant management as well as specialized equipment installers. Upon successful completion of this program, students should be able to:

- Demonstrate knowledge associated with mechanical systems, to include: conveyors, belt and gear drives and associated mechanisms.
- Repair, replace or install various types of industrial piping.
- Use effective use of manual and powered hand tools.
- Communicate technical information effectively in written and oral manners.
- Prepare and implement a plan for preventive maintenance of equipment.
- Use various electrical test and measurement devices.
- Read and interpret industrial system drawings and schematics.
- Describe the operation of a fluid power unit and explain flow, pressure, temperature and related measurements.
- Perform measurements, calculations and calibrations necessary for the proper installation and alignment of equipment.
- Interpret and troubleshoot programmable logic control systems.

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td><strong>ENG 100</strong> <em>English Composition I</em></td>
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<td><strong>TME 115</strong> <em>Basic Technical Skills</em></td>
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<tr>
<td><strong>TCC 111</strong> <em>Technical Communication</em></td>
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<tr>
<td><strong>MAT 110</strong> <em>Technical Mathematics I</em></td>
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<td><strong>IST 100</strong> <em>Introduction to Industrial System Technologies</em></td>
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<td><strong>IST 101</strong> <em>Industrial Drive Systems</em></td>
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<td><strong>TEL 101</strong> <em>DC Analysis</em></td>
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<td><strong>HVA 106</strong> <em>Basic Piping for Contractors</em></td>
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<td><strong>PCT 100</strong> <em>Plant Equipment (or)</em></td>
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<tr>
<td><strong>IST 105</strong> <em>Industrial Systems Driving Interpretation</em></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits Required: 15</strong></td>
<td></td>
</tr>
</tbody>
</table>
Third Semester

COM 100 Introduction to Interpersonal Communication .................. 3
ELT 203 Industrial Electrical Systems ......................................... 4
ENG 112 English Composition II .............................................. 3
PHY 100 Technical Physics I .................................................. 3
ELT 204 Introduction to Programmable Logic Controllers ................. 3

16

Fourth Semester

HVA 206 Industrial Piping ..................................................... 3
TME 229 Fluid Power and Controls ........................................... 4
MAT 111 Technical Mathematics II .......................................... 4
IST Elective* ........................................................................... 3
Social Science Elective ........................................................... 3

16

Total Credits Required: 63

**ISTD AAS Degree Elective Listing

TEL 200** Electro/Mechanical Systems ......................................... 3
IST 200 Pumping Systems ....................................................... 3
HVA 100 Introduction to Heating, Ventilating, Air Conditioning and Refrigeration and Electrical Fabrication .................. 2
WLD 100 Introduction to Welding Processes ................................ 2
TEL 102 AC Analysis ................................................................. 4
TCS 108 Construction Supervision ............................................ 3
TCS 109 Construction Project Administration ................................ 3
TCC 121 Project Management Processes .................................. 3

**PCT 100-For Industrial Systems Technology majors PCT 101 as a prerequisite is waived in lieu of students completing TST 100 Introduction to Industrial Systems Technology or permission of instructor.

***TEL 200-For Industrial Systems Technology majors TEL 110 as a prerequisite is waived in lieu of students completing ELT 203 Industrial Electrical Systems or permission of instructor.

Information Technology (IT) Associate in Applied Science

The Information Technology major at Delaware County Community College blends the theoretical with the practical. Students are offered a choice of specializations within the major: Programming, Computer Applications, Network Engineering, Web Development, Interactive Multimedia, Game Development and Help Desk. Students have the benefit of classroom instruction, the use of specialized laboratory facilities and participation in co-curricular programs in their specialization area. All Information Technology majors take core courses required for the associate in applied science and in addition, attend required information technology core courses. Students select an option with specialized courses and related electives. All Information Technology students are required to take the general education core courses listed below. In addition, students take 12 credits from the required Information Technology Core. The student will choose one of seven options to complete the requirement for the associate's degree. Optional Co-op/Internship available for some programs.

General Education Core: 21-26 Credits

Education Core

ENG 100 English Composition I .................................................. 3
ENG 112 English Composition II .............................................. 3

Total Credits Required: 65-71

Computer Programming Option (DPRP): 32-33 Credits

This concentration is intended to prepare students for a career or further study in computer programming. A computer programmer works with a computer analyst and computer engineer to analyze, design, develop, test, implement and maintain computer applications to meet the functional objectives of a business. It is the job of the computer programmer to design and update the software that runs on the computer. A programmer usually works with an analyst to help determine the best way to approach a problem or implement a desired feature for a new version of a software package. A programmer codes the changes and then tests and debugs the software.

The Computer Programming curriculum is designed to prepare students for employment as computer programmers. This option emphasizes the more popular computer languages used in businesses today.

In conjunction with the general education and IT core requirements students should be able to:

- Analyze problems with respect to the requirements of the computer and the required results
- Plan detailed program logic to solve problems and convert the logic to a well-structured applications program using a problem-oriented language and providing program documentation
- Demonstrate the ability to use debugging techniques, the computer system library, software aides and utilities in the development and application of a computer program
- Demonstrate an understanding of the structure of mathematics and its relation to computers
- Demonstrate the ability to communicate effectively using appropriate computer technology with programmers, analysts and management

Programming Core: 32-33 Credits

DPR 108 Introduction to Computer Science .................................... 3
DPR 205 Introduction to Java Programming .................................... 4
DPR 207 Introduction to Oracle: SQL ............................................ 4
DPR 209 Programming in PERL ................................................... 4
DPR 212 Data Structures & Algorithms ....................................... 4
DPR 222 Visual Basic Programming ............................................ 4
DPR 226 Object Oriented C++ ..................................................... 4

DPR Elective* (Choose two):

DPR 113 Database Management Systems ..................................... 4
DPR 141 UNIX Operating Systems ............................................ 3
DPR 206 Programming for the Web ............................................ 3
Co-op/Internship or IMM/DPR/NET Electives ................................. 3

Total Credits Required: 65-71
Computer Applications Option (ITCA): 28-30 Credits

This concentration is intended to prepare students for a career or further study in computer applications. This program option prepares students to use the Microsoft Office suite of products, the most popular computer software product employed in business and government. Complete mastery of each application is stressed.

Upon successful completion of this program, students should be able to:
- Use Microsoft PowerPoint to design and create informational and motivational slides that contain hyperlinks, tables, clip art and animation.
- Develop personal qualities needed to function effectively with individuals and organizations in business.
- Analyze and resolve problems common to entry-level management personnel.
- Discuss business terminology and concepts.

Computer Application Core: 28-30 credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 130</td>
<td>Business Communication</td>
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</tr>
<tr>
<td>BUS 214</td>
<td>Organizational Behavior</td>
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<td>BUS 225</td>
<td>Professional Development</td>
<td></td>
</tr>
<tr>
<td>DPR 113</td>
<td>Database Management Systems</td>
<td>4</td>
</tr>
<tr>
<td>DPR 114</td>
<td>Microsoft Word</td>
<td></td>
</tr>
<tr>
<td>DPR 115</td>
<td>Microsoft Excel</td>
<td></td>
</tr>
<tr>
<td>DPR 253</td>
<td>Integrated Software</td>
<td></td>
</tr>
</tbody>
</table>

Choose two electives from IMM/NET/DPR

Total Credits Required: 61-68

Game Development Option (ITGD): 29 Credits

This concentration is intended to prepare students for a career or further study in the game development field. The courses represent specific skills necessary to train students in the design, development, marketing, and testing of computer games. Students contemplating a career in video game development should elect this concentration.

In conjunction with the general education and IT core requirements students should be able to:
- Program a game in an object oriented programming language
- Develop a prototype from their game design using a game development tool
- Create Web pages using advanced formatting techniques, tables, frames, forms, Cascading Style Sheets, and Web publishing applications
- Develop a game concept and create a game design document
- Plan for a professional Web site including graphics design, structural analysis, and data gathering.
- Use strategies for merging and integrating source data from different applications using commands for object linking and embedding.
- Discuss business terminology and concepts.
- Analyze and resolve problems common to entry-level management personnel.
- Develop personal qualities needed to function effectively with individuals and organizations in business.

Game Development Core: 29 credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPR 108</td>
<td>Introduction to Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>DPR 232</td>
<td>Introduction to Computer Game Design and Development</td>
<td>3</td>
</tr>
<tr>
<td>DPR 226</td>
<td>Object Oriented C++ (or)</td>
<td></td>
</tr>
<tr>
<td>DPR 205</td>
<td>Introduction to JAVA Programming</td>
<td></td>
</tr>
<tr>
<td>DPR 234</td>
<td>Introduction to Computer Game Programming</td>
<td></td>
</tr>
<tr>
<td>DPR 236</td>
<td>Game Art &amp; Animation (or)</td>
<td></td>
</tr>
<tr>
<td>GRA 207</td>
<td>Electronic Illustration I</td>
<td></td>
</tr>
<tr>
<td>IMM 110</td>
<td>Multimedia Graphics and Design</td>
<td></td>
</tr>
<tr>
<td>IMM 201</td>
<td>Audio and Video for Multimedia</td>
<td></td>
</tr>
<tr>
<td>DPR 238</td>
<td>Game Design Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>DPR 250</td>
<td>Game Portfolio</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits Required: 62-67

Network Engineering Option (DPRN): 34 credits

The Network Engineering option prepares students for employment as networking specialists in the telecommunications industry. The program includes the knowledge and skills necessary to successfully complete many of the tests required for Novell’s Certified Network Administrator certification and Microsoft’s Certified Professional certification. Students may also take courses to prepare for Novell’s CNE or Microsoft’s MCSE certification. Because of the constantly changing nature of the technology in this program, students are advised to meet on a consistent basis with their faculty advisor.

In conjunction with the general education and IT core requirements students should be able to:
- Install and configure NetWare network operating system.
- Administer, manage, and troubleshoot NetWare operating system.
- Install and configure Microsoft operating system.
- Administer, manage, and troubleshoot an operating system.
- Analyze, test, and propose solutions for problems relating to network cabling, hubs, servers, workstations, and other physical network devices.
- Analyze, test, and propose solutions relating to network printing.
- Analyze, test, and propose solutions for problems relating to network protocols, including the Internet (TCP/IP) protocol suite.
- Given a set of factors and constraints, design an appropriate network topology and its transmission media.

Networking Core: 34 Credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NET 115</td>
<td>Windows 2000 Professional</td>
<td></td>
</tr>
<tr>
<td>NET 116</td>
<td>Microsoft Windows Server 2003</td>
<td></td>
</tr>
<tr>
<td>NET 117</td>
<td>Win 2000 Directory Services Implementation &amp; Administration</td>
<td>4</td>
</tr>
<tr>
<td>NET 210</td>
<td>CISCO Network Support</td>
<td></td>
</tr>
<tr>
<td>NET 230</td>
<td>Novell Network Administration (6.x)</td>
<td></td>
</tr>
<tr>
<td>NET 231</td>
<td>Advanced Novell Network Administration (6.x)</td>
<td>4</td>
</tr>
<tr>
<td>NET 232</td>
<td>Network Design and Implementation (6.x)</td>
<td></td>
</tr>
<tr>
<td>NET 241</td>
<td>Network Protocols TCP/IP</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits Required: 67-72

Web Development Option (ITWD): 30 Credits

The Web Development option is designed for students interested in pursuing a career as a Web professional. Completion of this program option will provide students with the skills needed for entry-level positions as Web page designers/developers. Concepts covered include information design, navigation, and interface design. Students also learn to create Web sites using HTML, XHTML, CSS, JavaScript and PERL/CGI, and how to incorporate new media technologies such as sound, video, and animation into Web sites and use state-of-the-art development tools such as Dreamweaver, Flash, Director, Sound Forge XP, Photoshop, and Media Studio Pro.

In conjunction with the general education and IT core requirements students should be able to:
- Create Web documents using current HTML/XHTML standards.
- Create Web pages using advanced formatting techniques, tables, frames, forms, Cascading Style Sheets, and Web publishing applications.
- Use Microsoft PowerPoint to design and create informational and motivational slides that contain hyperlinks, tables, clip art and animation.
- Use state-of-the-art development tools such as Dreamweaver, Flash, Director, Sound Forge XP, Photoshop, and Media Studio Pro.
- Create Web pages using advanced formatting techniques, tables, frames, forms, Cascading Style Sheets, and Web publishing applications.
- Create Web documents using current HTML/XHTML standards.
- Create Web pages using advanced formatting techniques, tables, frames, forms, Cascading Style Sheets, and Web publishing applications.
- Create Web pages using advanced formatting techniques, tables, frames, forms, Cascading Style Sheets, and Web publishing applications.
- Create Web pages using advanced formatting techniques, tables, frames, forms, Cascading Style Sheets, and Web publishing applications.
Web Development Core: 30 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>IMM 100</td>
<td>Interface Design Using Director</td>
<td>3</td>
</tr>
<tr>
<td>IMM 205</td>
<td>Flash</td>
<td>3</td>
</tr>
<tr>
<td>DPR 108</td>
<td>Introduction to Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>DPR 206</td>
<td>Programming for the Web</td>
<td>3</td>
</tr>
<tr>
<td>DPR 207</td>
<td>Introduction to Oracle: SQL</td>
<td>4</td>
</tr>
<tr>
<td>DPR 141</td>
<td>UNIX Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>DPR 209</td>
<td>PERL/CGI Programming</td>
<td>3</td>
</tr>
<tr>
<td>NET 115</td>
<td>Windows 2000 Professional (or)</td>
<td></td>
</tr>
<tr>
<td>NET 230</td>
<td>Novell Network Administration (6.x)</td>
<td>4</td>
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</tbody>
</table>

DPR electives (select ONLY one of the following):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPR 205</td>
<td>Introduction to JAVA Programming</td>
<td>4</td>
</tr>
<tr>
<td>DPR 222</td>
<td>Visual Basic Programming</td>
<td>4</td>
</tr>
<tr>
<td>DPR 226</td>
<td>Object Oriented C++</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits Required: 63-68

Interactive Multimedia Option (IMM): 28 Credits

This program option provides the student knowledge and skills to develop World Wide Web (WWW) pages and Computer-Based Training (CBT) applications that employ a variety of audio and visual media including animation, video and graphics.

In conjunction with the general education and IT core requirements students should be able to:

- Identify elements of effective multimedia, CBT and/or web applications.
- Utilize the instructional design process for CBT, multimedia and/or web applications, including needs and assessment, audience analysis, media selection, storyboard, materials development and program evaluation.
- Determine the appropriate platform (or combination of platforms) for specific audience environment (text, audio, video) and desired results for CBT, multimedia, and/or web applications.
- Use appropriate authoring tools and programming languages required for production of CBT, multimedia and web applications.
- Use high-level programming languages required for multimedia, CBT or web application development. Identify and incorporate the effective elements of interface design into a CBT or web application.
- Design and create multimedia, CBT or web projects that illustrate appropriate use of text, color, sound, video and user interactivity.
- Demonstrate ability to work in teams to create multimedia, CBT and/or web applications.

Interactive Multimedia Core: 28 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMM 100</td>
<td>Interface Design Using Director</td>
<td>3</td>
</tr>
<tr>
<td>IMM 110</td>
<td>Multimedia Graphics &amp; Design</td>
<td>3</td>
</tr>
<tr>
<td>IMM 201</td>
<td>Audio &amp; Video for Multimedia</td>
<td>3</td>
</tr>
<tr>
<td>IMM 202</td>
<td>Authorware</td>
<td>3</td>
</tr>
<tr>
<td>IMM 205</td>
<td>Flash</td>
<td>3</td>
</tr>
<tr>
<td>IMM 250</td>
<td>Portfolio Development</td>
<td>3</td>
</tr>
<tr>
<td>DPR 108</td>
<td>Introduction to Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>DPR 205</td>
<td>Introduction to JAVA Programming</td>
<td>3</td>
</tr>
<tr>
<td>DPR 226</td>
<td>Object Oriented C++</td>
<td>4</td>
</tr>
<tr>
<td>DPR 206</td>
<td>Programming for the Web</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits Required: 61-66

Help Desk/Technical Support (DPM): 31-33 credits

This option provides students with the necessary skills for employment at a help desk or as a technical support person in a computer environment. The program reflects the growing emphasis on assessment of skills and skill levels. The learning sequence established by this curriculum is designed to prepare students to quality to take certification examinations including, Net+, Microsoft Office Specialist (MOS), Service Technician (A+), Microsoft Certified Professional (MCP), Novell Certified Netware Administrator (CNA), and Cisco (CCNA).

In conjunction with the general education and IT core requirements students should be able to:

- Demonstrate proficiency in the use of application software.
- Demonstrate proficiency in the use of integrated office software.
- Communicate effectively using appropriate computer terminology.
- Demonstrate the skills necessary to support customers and troubleshoot microcomputers.
- Install and troubleshoot microcomputers in a networked environment.
- Maintain the hardware and software in a networked environment.
- Discuss the hardware and software needs found in a modern business environment.

Help Desk Core: 31-33 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPR 107</td>
<td>Help Desk Concepts</td>
<td>3</td>
</tr>
<tr>
<td>DPR 111</td>
<td>Advanced Microsoft Office</td>
<td>4</td>
</tr>
<tr>
<td>DPR 113</td>
<td>Database Management Systems</td>
<td>4</td>
</tr>
<tr>
<td>DPR 227</td>
<td>Introduction to PC Support</td>
<td>3</td>
</tr>
<tr>
<td>DPR 228</td>
<td>PC Repair and Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>NET 116</td>
<td>Microsoft Windows Server 2003</td>
<td>4</td>
</tr>
<tr>
<td>NET 230</td>
<td>Novell Network Administration (6.x)</td>
<td>4</td>
</tr>
</tbody>
</table>

Insurance Claims Adjuster, Associate in Applied Science (INS)

The Insurance Claims Adjuster curriculum is designed to service the professional growth and career needs of the insurance industry with respect to claims practice. The program is also designed to service the professional growth and career needs of currently employed claims adjuster professionals who have had little or no formal training or education. The courses mandated by the core curriculum afford a broad perspective of the insurance claims industry. Additional opportunities are provided for specialization by judicious use of program elective course work. Graduates of the program are awarded the associate in applied science.

Upon successful completion of this program, students should be able to:

- Explain the basic principles and procedures of the civil laws that govern the administration of the insurance claims practice
- Identify the major insurance market areas and apply the basic principles and procedures of insurance to the claims adjusting practice
- Explicate the principles and procedures involved in effective claims investigations
- Explicate the fundamental concepts and principles of case management and negotiations employed in claims facilitation
- Report observations and information accurately and effectively
- Apply basic principles to factual situations
- Constructively critique policies and operations
- Demonstrate a positive attitude toward the legal and human rights of others
- Respect the dignity and humanity of both victim and defendant in a civil tort action as they seek remedies at law and equity
- Maintain a professional attitude toward their role in the insurance claims operation
- Interface professionally and properly with all who have a vested interest in the facilitation, negotiation and settlement or litigation of an insurance claim

See Electives Listing, page 74

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>INS 100</td>
<td>Introduction to Insurance</td>
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<tr>
<td>BUS 241</td>
<td>Business Law I</td>
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<tr>
<td>ENG 100</td>
<td>English Composition I</td>
<td>3</td>
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<tr>
<td>SOC 100</td>
<td>Human Relations</td>
<td>3</td>
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<td>Math/Science Elective</td>
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</table>
Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>INS 210</td>
<td>Evidence and Investigative Principles</td>
<td>3</td>
</tr>
<tr>
<td>INS 230</td>
<td>Liability Insurance Claims Adjusting</td>
<td>3</td>
</tr>
<tr>
<td>ENG 112</td>
<td>English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>ACC 100</td>
<td>Applied Accounting</td>
<td>3</td>
</tr>
<tr>
<td>**</td>
<td>Math/Science Elective</td>
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<td>Open Electives</td>
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Third Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>INS 240</td>
<td>Property Insurance Claims Adjusting</td>
<td>3</td>
</tr>
<tr>
<td>INS 211</td>
<td>File Management and Negotiations</td>
<td>3</td>
</tr>
<tr>
<td>DPR 100</td>
<td>Introduction to Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>BUS 130</td>
<td>Business Communications</td>
<td>3</td>
</tr>
<tr>
<td>**</td>
<td>Insurance Elective</td>
<td>3</td>
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<tr>
<td>**</td>
<td>Humanities Elective</td>
<td>3</td>
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<tr>
<td>**</td>
<td>Open Electives</td>
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Fourth Semester

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<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>INS 231</td>
<td>Seminar in Insurance Problems</td>
<td>3</td>
</tr>
<tr>
<td>**</td>
<td>Insurance Elective</td>
<td>3</td>
</tr>
<tr>
<td>**</td>
<td>Humanities Elective</td>
<td>3</td>
</tr>
<tr>
<td>**</td>
<td>Open Electives</td>
<td>6</td>
</tr>
<tr>
<td>**Total</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Total Hours Required: 61-62

*See advisor for Business Law substitute
Students who have experience in the above areas may be awarded credit through the College’s Credit for Prior Learning program.

Machine Tool Technology, Associate in Applied Science (MTT)

The associate in applied science degree in Machine Tool Technology emphasizes the advanced manufacturing technologies. Students are prepared to work in precision tooling, machining, and manufacturing. Graduates could qualify for positions as machine tool operators; machinists; Computerized Numerically Controlled (CNC) machinists and programmers; Electrical Discharge Machine (EDM) operator/programmers; computer-aided drafting/design and computer-aided machining/manufacturing (CAD-CAM) programmers, toolmakers, mold makers, and inspectors.

Upon successful completion of this program, students should be able to:
- Analyze, interpret, and apply engineering specifications for the production of manufactured/machined parts, and, assist in solving engineering-related problems.
- Solve routine problems associated with work-cell (shop floor) machining/manufacturing.
- Demonstrate continuous knowledge and skill development traits required for mastery of advanced technologies.
- Decipher and evaluate the impact of shop-floor technologies.
- Communicate advanced technological concepts in an oral, written, and graphical format.
- Formulate a means for continuous evaluation of personal growth requirements to assure technological preparedness in managing a career in the challenging field of precision machining/manufacturing.
- Operate conventional and Computer Numerically Controlled machine (CNC) tools and other automated equipment.
- Program machine tools and related equipment via the use of Computer Aided Manufacturing (CAM) system hardware and software.
- Validate, via inspection, and process documents, the readiness of products for customer distribution.

First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*MAT 110</td>
<td>Technical Mathematics I</td>
<td>4</td>
</tr>
<tr>
<td>MTT 110</td>
<td>Print Layout and Measurement for Machining</td>
<td>4</td>
</tr>
<tr>
<td>MTT 111</td>
<td>Introduction to Manufacturing</td>
<td>3</td>
</tr>
<tr>
<td>TCC 111</td>
<td>Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>MTT 112</td>
<td>Lathe Operations I</td>
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<tr>
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</table>

Second Semester

<table>
<thead>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MTT 122</td>
<td>Lathe Operation II</td>
<td>3</td>
</tr>
<tr>
<td>MTT 124</td>
<td>Milling Operations I</td>
<td>3</td>
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<tr>
<td>*MAT 111</td>
<td>Technical Mathematics II</td>
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<tr>
<td>ENG 100</td>
<td>English Composition I</td>
<td>3</td>
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<tr>
<td>MTT 129</td>
<td>Solids (CAM) Modeling</td>
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Third Semester

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<td>CAM Solids I</td>
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<td>English Composition II</td>
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<td>Introduction to Interpersonal Communication</td>
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Total Credits Required: 67-68

*MAT 140, MAT 141 or MAT 160, MAT 161 may be elected instead.
**Social Science Electives (SOC 100 to 200), American History II (HIS 120); or, Microeconomics Principles (ECO 220)
***Suggested machining electives: Manufacturing Processes (MTT 213), Technical Mechanics (TME 231), Statics and Strength of Materials (TME 216), Project Management Processes (TCC 121), Robotics and Programmable Logic Controllers (TME 220), Fluid Power and Controls (TME 229), Robotic Systems (TME 232), Introduction to Nanotechnology (SCI 105), Co-op/Internship, any 3 or 4 credit combination.

Mechanical Technology Associate in Applied Science (ATEC)

The associate degree in Mechanical Technology is designed to prepare graduates with the knowledge and skills required of technicians in a variety of industrial fields.

Upon successful completion of this program, students should be able to:
- Create engineering drawings and related documents for design using computer-assisted techniques.
- Plan and implement technical projects under engineering supervision.
- Assist in the design of mechanical and electro/mechanical systems in accordance with standard engineering practices.
- Present technical and graphical information in an organized fashion.

The associate degree in applied science will be awarded after satisfactory completion of this four-semester program.
Considered individually.

Interfere with the applicant's ability to meet program competencies are certain manual dexterity and sensory abilities that will enable the student to register for Medical Assistant Techniques and Practicum I (AHM 106).

Monetary remuneration or other reimbursement.

Externships are work/learning experiences for which the student receives no health care clinics under the supervision of the allied health faculty. These clinic externalships will be provided in local medical offices and selected clinical externships will be provided in local medical offices and care settings. The responsibilities of the medical assistant include administrative and clinical duties. The graduate is then eligible to write the examination for national certification administered through the American Association of Medical Assistants.

An associate degree in applied science will be awarded upon successful completion of the required program with a 2.0 G.P.A. and a "C" or better in all allied health courses. The graduate is then eligible to write the examination for national certification administered through the American Association of Medical Assistants.

In addition to the normal tuition and fees, medical assistant students are required to purchase uniforms and miscellaneous supplies.

Medical Assistant, Associate in Applied Science (MED)

The Medical Assistant program prepares students as multi-skilled health care workers who function as assistants to physicians in a variety of ambulatory care settings. The responsibilities of the medical assistant include administrative and clinical duties. The Delaware County Community College Medical Assistant program is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org), upon the recommendation of the Medical Assisting Education Review Board (MAERB).

All medical assistant applicants are required to submit a "Criminal History Record Information Report" and be free of any conviction of elder or child abuse for 10 years prior to beginning the first clinical course.

Selected clinical externships will be provided in local medical offices and health care clinics under the supervision of the allied health faculty. These externships are work/learning experiences for which the student receives no monetary remuneration or other reimbursement.

Medical assistant applicants are required to take college placement tests in math, reading and English skills. Any deficiencies must be remedied prior to registering for Medical Assistant Techniques and Practicum I (AHM 106). Certain manual dexterity and sensory abilities that will enable the student to competently perform required technical skills are necessary for successful completion of the Medical Assistant program. Health problems that can interfere with the applicant's ability to meet program competencies are considered individually.

All medical assistant students will need to have on file in the Health Center the results of a complete physical examination including: laboratory tests, a complete blood count, serology, a 9-pan urine drug screen and TB testing prior to beginning the clinical component of the program. Please refer to the pre-entrance medical record health form requirements from the Health Center. Additionally, students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine. Full CPR certification is required. You must submit a photocopy (both sides) of "Health Care Provider" (American Heart Association) which is renewable every two years or "Course for the Professional" (American Red Cross) which is renewable annually. Documentation of completion of the above must be on file in the Health Center prior to entering the Medical Assistant Externship (AHM 199).

Students may be removed from the program for violation of patient safety, confidentiality or behavior incompatible with acceptable standards pending outcome of the appeal process.

Upon successful completion of this program, students should be able to:

- Demonstrate an understanding of the anatomical structure and physiological functioning of the human body and of medical terms descriptive of body systems.
- Identify the business/administrative and clinical duties of the medical assistant.
- Describe the ethical and legal responsibilities of the medical assistant in the health-care delivery system.
- Apply selected principles of biophysical and psychosocial sciences in providing assistance to the physician.
- Maintain business and patient health records.
- Function as an assistant to the physician in medical and/or other clinical settings.

An associate degree in applied science will be awarded upon successful completion of the required program with a 2.0 G.P.A. and a "C" or better in all allied health courses. The graduate is then eligible to write the examination for national certification administered through the American Association of Medical Assistants.

In addition to the normal tuition and fees, medical assistant students are required to purchase uniforms and miscellaneous supplies.

See Electives Listing, Page 74.
**Nanofabrication Manufacturing Technology, Associate in Applied Science (NMT)**

The NMT program introduces a series of new courses and an associate degree with an emphasis on high-tech industries. The goal of this program is to prepare graduates for employment as entry-level nanofabrication technicians. Nanofabrication manufacturing involves making devices at the smallest dimensions and was first used in the semiconductor (computer chip) industry. Upon successful completion of this program, students should be able to:

- Describe the operation and application of commonly used electronic components and circuits.
- Repair malfunctions in electrical and electro-mechanical instruments.
- Fix electrical and electro-mechanical instruments.
- Demonstrate an understanding of the terminology, procedures, equipment, and processes used in semiconductor processing.
- Demonstrate safe and appropriate maintenance techniques for basic semiconductor processing equipment.
- Operate nanofabrication processing equipment with a focus on safety, environmental and health issues.
- Identify material and physical hazards associated with basic semiconductor processing equipment.
- Communicate advanced technical concepts in an oral, written, and graphical form.
- Use the computer in reporting, analyzing, and researching technical information.
- Provide an active problem-solving link between engineers and production personnel.
- Record relevant information in a working lab notebook.
- Identify industries using nanofabrication technology such as opto-electronics, biomedical, sensors, flat panel displays, information storage, microelectromechanical devices, micro-fluidics, solar cells, and microelectronics.

### First Semester

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### Nursing, Associate in Applied Science (NURS)

The mission of the DCCC associate degree nursing program is to provide a curriculum where students, committed to the value of caring, can develop competencies essential to safe, effective nursing practice in a variety of health care settings within the community.

The nursing curriculum prepares students for positions as beginning staff nurses in a variety of settings; i.e. acute- and long-term/transitional care facilities and community settings.

Upon successful completion of the curriculum, students receive an associate in applied science (AAS) degree and are eligible to sit for the state licensure examination to become registered nurses (NCLEX-RN).

Most nursing students attend classes at the College and off-campus sites. For residents of Chester County, two sections are available with nursing classes at The Chester County Hospital.

Selected clinical laboratory learning experiences, under the direct guidance of
nursing faculty, are provided at a variety of health-care agencies. The purpose of these experiences is to provide the student with the opportunity to apply classroom learning in direct patient-care situations.

All nursing applicants are required to complete and submit a criminal record check and a Child Abuse Clearance form.

Under Pennsylvania law, the State Board of Nursing may not issue a license to an applicant who has been convicted of a felonious act prohibited by the Controlled Substance, Drug, Device and Cosmetic Act, or convicted of a felony relating to a controlled substance in a court of law of the United States or any other state, territory or country unless 10 years have elapsed since the date of conviction and the applicant can demonstrate that he/she has made significant progress in personal rehabilitation.

Students who have been convicted of a prohibitive offense contained in Act 13 and/or Act 169 (detailed list available for review in the Admissions and Allied Health offices) may not be able to complete their studies because clinical experiences needed for course/program success may be prohibited. If a student cannot complete their clinical studies, they will not be accepted into the nursing program.

The nursing program is accredited by the National League for Nursing Accrediting Commission, 3343 Peachtree Road N.E., Suite 500, Atlanta, GA 30326, 404-975-5000, www.nlac.org. It is also approved by the Pennsylvania State Board of Nurse Examiners, P.O. Box 2649, Harrisburg, PA 17105-2649, 717-783-7142, www.dos.state.pa.us. Program outcomes are defined and measurable.

Upon successful completion of this program, students should be able to:

• Integrate theories and concepts of biopsychosocial sciences and liberal arts in the application of the nursing process.

• Provide responsible, accountable nursing care for multicultural individuals and groups in a variety of health care settings.

• Utilize critical thinking, therapeutic nursing interventions, and communication skills and techniques to meet the basic needs of individuals of all ages experiencing common and/or complex health problems.

• Practice within the ethical and legal framework of nursing.

• Use patient advocacy skills while managing care that contribute to positive outcomes.

• Demonstrate commitment to continuous personal and professional development.

• Contribute to the improvement of nursing practice through committee participation and membership in professional nursing organizations.

Students must progress through the curriculum in sequence. All nursing students who have a course with a clinical component will need to have on file in the Health Center the results of a complete physical examination including: laboratory tests, a complete blood count, a 9 panel drug screen, serology and TB testing. A complete physical examination is required prior to taking the first nursing course. Additionally, these students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine. Certain manual dexterity and sensory skills that enable the student to competently perform required technical skills are necessary for successful completion of the nursing program. Health problems that can interfere with the applicant’s ability to demonstrate achievement of program competencies are considered individually.

Credits for BIO 150 and BIO 151 must be current within five academic years of the date of beginning the first clinical nursing course and students must achieve a "C" grade in BIO 150 and BIO 151.

Any remediation in English and reading must be satisfied before beginning Fundamentals of Nursing (NUS 110). All NUS 110 students must meet a math requirement either by passing a Math Equivalency Test given during Spring orientation sessions or by passing NUS 102, Nursing Mathematics. The competency to solve basic mathematical problems related to drug dosage calculation is a component of Nursing 110. PLEASE NOTE: Entry into Nursing Concepts and Practice I (NUS 111) will be denied to any student who has not mastered the mathematical competencies of NUS 110. It is recommended that

CAREER PROGRAMS, ASSOCIATE DEGREE 51

Pennsylvania State Board of Nurse Examiners, P.O. Box 2649, Harrisburg, PA 17105-2649, 717-783-7142, www.dos.state.pa.us. Program outcomes are defined and measurable.

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• Contribute to the improvement of nursing practice through committee participation and membership in professional nursing organizations.

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Credits for BIO 150 and BIO 151 must be current within five academic years of the date of beginning the first clinical nursing course and students must achieve a "C" grade in BIO 150 and BIO 151.

Any remediation in English and reading must be satisfied before beginning Fundamentals of Nursing (NUS 110). All NUS 110 students must meet a math requirement either by passing a Math Equivalency Test given during Spring orientation sessions or by passing NUS 102, Nursing Mathematics. The competency to solve basic mathematical problems related to drug dosage calculation is a component of Nursing 110. PLEASE NOTE: Entry into Nursing Concepts and Practice I (NUS 111) will be denied to any student who has not mastered the mathematical competencies of NUS 110. It is recommended that

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Credits for BIO 150 and BIO 151 must be current within five academic years of the date of beginning the first clinical nursing course and students must achieve a "C" grade in BIO 150 and BIO 151.

Any remediation in English and reading must be satisfied before beginning Fundamentals of Nursing (NUS 110). All NUS 110 students must meet a math requirement either by passing a Math Equivalency Test given during Spring orientation sessions or by passing NUS 102, Nursing Mathematics. The competency to solve basic mathematical problems related to drug dosage calculation is a component of Nursing 110. PLEASE NOTE: Entry into Nursing Concepts and Practice I (NUS 111) will be denied to any student who has not mastered the mathematical competencies of NUS 110. It is recommended that Nursing Mathematics (NUS 102) be taken prior to Nursing 110. NUS 102 requires mathematics at the developmental level (MAT 060).

Students can repeat the following nursing courses (NUS 110, NUS 111, NUS 210 or NUS 211) at a specific level only once!

The policy for readmission will be as follows:

• The minimum GPA for readmission is a 2.5 or greater, as documented by official college transcripts.

• The number of times for readmission to the nursing program will be one time for each level (either NUS 110 or NUS 111; either NUS 210 or NUS 211) of the Nursing Program.

• A student will be kept on the readmission waiting list for no longer than three years.

• Successful completion of a mandated “Sim Lab Skills Testing” is a condition of readmission (skills to be determined by the appropriate level faculty).

Implementation of the revised readmission policy will be Fall 2010, effective with the incoming Nursing 110 class.

CPR certification is required for all students in the program. You must submit a photocopy (both sides) of “Health Care Provider” (American Heart Association at 610-940-9540, which is renewable every two years) or “Course for the Professional” (American Red Cross at 610-566-4580, which is renewable annually) to the College Health Nurse by the last Thursday in July of each academic year. "CCLS“ and "Heart Saver“ are not acceptable! Certification must be inclusive until the end of May. Certifications that expire prior to May will not be accepted even if recertification prior to May is provided by an employer.

Students are responsible for purchasing uniforms and other related materials deemed necessary for the clinical laboratory experiences of the program. Each semester students are assessed additional costs ($75 per semester) for standardized tests to compare achievement against national norms. In addition, each student must carry professional liability insurance to protect him/herself and the health agency in the event of any legal action following any error in nursing practice. A $5.00 fee will be added to your tuition bill each semester in which you participate in a clinical experience.

Special Options
1. Licensed Practical Nurses, corpsmen, and candidates who have had one year of successful previous nursing school experience may qualify for advanced placement in the program. In addition, an advanced placement option is available to LPNs who have graduated from an NLNAC accredited program with a minimum of 1,000 clinical work experience as an LPN. Students will receive credit for the first year of the nursing program after meeting certain criteria. Contact a counselor in the Assessment Center for additional information.

2. A five-semester evening/weekend option is available. Course sequencing begins in January. Criteria for admission and progression are the same as for the generic curricula.

Program of Study and Graduation Requirements
The degree of associate in applied science is awarded upon successful completion of the nursing course sequence with a grade of "C" or better in all nursing courses; a satisfactory grade for related clinical experiences and satisfactory completion of performance practicum’s and course requirements; attainment of a grade point average of 2.0 ("C" average) and completion of 70 or 71 credit hours. A "C" grade in nursing is equivalent to the numerical grade of 75.

See Electives Listing, Page 74.
## Curricular Sequence: Day Program

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**Electives to choose from**

- NUS 220 Clinical Enhancement Skills 3
- NUS 221 Pharmacology for Health Care 3
- NUS 222 Holistic Advanced Physical Assessment and Pathophysiology 3

**Total Credits Required:** 70

## Curricular Sequence: Evening/Weekend Program

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**Electives to choose from**

- NUS 220 Clinical Enhancement Skills 3
- NUS 221 Pharmacology for Health Care 3
- NUS 222 Holistic Advanced Physical Assessment and Pathophysiology 3

**Total Credits Required:** 70

### Paralegal Studies, Associate in Applied Science (PLG)

Approved by the American Bar Association (ABA)

Paralegal Studies is an associate degree program intended to train a generalist paralegal. Graduates are likely to find employment as paralegals under the direction of attorneys (to do otherwise would be practicing law without a license) in law firms, legal departments of large corporations, insurance companies, title companies, legal service companies and federal, state or local governmental agencies. In short, wherever lawyers are employed, paralegals are likely to be lawfully employed.

Students who wish to pursue additional education in law or in other disciplines, as part of their future plans should consult with an advisor before selecting courses.

Upon successful completion of this program, students should be able to:

- Conduct legal research to identify the appropriate laws, judicial decisions, regulations and other legal literature applicable to specific legal problems.
- Research and draft written memoranda as directed by an attorney.
- Research and draft pleadings and other legal documents as directed by an attorney.
- Investigate and develop the facts of a case under the direction of an attorney.
- Assist an attorney to prepare a case for trial and assist during trial.
- Maintain all relevant case documents.
- Maintain files of a case including but not limited to correspondence, pleadings, reports and briefs.
- Draft basic documents applicable to contracts, real estate transactions, domestic relations, and estates, trusts and wills as well as other appropriate legal documents.
- Apply modern technology to the performance of legal work and tasks.
- Identify and analyze the ethical issues that arise for the Paralegal Professional.

See Electives Listing, Page 74.
**Fourth Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLG 211</td>
<td>Civil Litigation and Tort Applications</td>
<td>3</td>
</tr>
<tr>
<td>PLG 220</td>
<td>Real Estate Law</td>
<td>3</td>
</tr>
<tr>
<td>PLG 230</td>
<td>Estates, Wills and Trusts</td>
<td>3</td>
</tr>
<tr>
<td>PLG 199</td>
<td>Co-op Internship/Paralegal Electives</td>
<td>3</td>
</tr>
<tr>
<td>______</td>
<td>PLG Paralegal Elective</td>
<td>______</td>
</tr>
</tbody>
</table>

Total Credits Required: 60

* Business Math (MATH 105) or any mathematics course numbered MAT 120 or higher.

A certificate program is also available. See page 69.

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**Paramedic - Advanced Life Support, Associate in Applied Science (EMTP)**

The Associate in Applied Science Degree: Paramedic - Advanced Life Support program is designed for individuals who are seeking careers as paramedics and/or careers that are related to medical emergencies. The primary focus of the program is to provide an educational vehicle and skill set for emerging paramedic professionals. The technical core of the program focuses on the knowledge and skills required to effectively manage and mitigate emergency medical disasters. The competencies and course content have been developed with significant consideration of the coursework developed by the Emergency Medical Technician-Paramedic (EMTP) National Standard Curriculum. The Delaware County Community College is an accredited Emergency Medical Services Training Institute with the Pennsylvania Department of Health, Bureau of EMS.

An Associate of Applied Science will be awarded upon completion of the Paramedic-Advanced Life Support curriculum with a 2.0 GPA and a “C” or better in all Emergency Medical Services (EMS) courses and BIO 150 and BIO 151. Students in this degree program must maintain a “C” or better in the EMS courses and BIO 150 and BIO 151 to remain in the program and must progress through the curriculum in sequence. Upon successful completion of the 40 credits of EMS core classes and 8 credits of Anatomy and Physiology, students are eligible to sit for the National Registry exam to become certified as a Paramedic.

Students may be dismissed from the program for violation of patient safety, confidentiality or behavior incompatible with acceptable standards pending outcome of the appeal process.

By completion of the second semester, students are required to:
- Submit a Criminal Background check
- Submit a clear Child Abuse background check
- Take a medical physical and drug testing
- Submit verification of current medical health insurance, which must be maintained throughout the program. Information about health insurance plans for students is available in the Health Center at Marple Campus.
- Be 18 years of age or older
- Be currently certified as a Pennsylvania Emergency Medical Technician-Basic or have a reciprocity application in process for PA EMT-B

The above documentation must be submitted to the Delaware County Community College Director of Public Safety who advises individuals in this program. Upon successful completion of this program, the student should be able to:
- Demonstrate communication skills.
- Record documentation accurately.
- Perform pharmacology mathematical skills.
- Demonstrate the ability to comprehend, apply, and evaluate clinical information.
- Demonstrate technical proficiency in all skills necessary to fulfill the role of a paramedic.
- Demonstrate personal behaviors consistent with professional and employer expectations.
- Demonstrate proficiency in EKG interpretation, medication administration, intubation procedures and intravenous initiation.
- Demonstrate entry level competencies in all clinical situations.
- Discuss and demonstrate the ability to differentiate the severity of illness.

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**First Year, Fall Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS 100</td>
<td>Emergency Medical Technician-Basic</td>
<td>7</td>
</tr>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>BIO 150</td>
<td>Human Anatomy and Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>NUS 102</td>
<td>Nursing Mathematics: Dosage Calculation &amp; Drug Preparation</td>
<td>1</td>
</tr>
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</table>

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**First Year, Spring Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 112</td>
<td>English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>BIO 151</td>
<td>Human Anatomy and Physiology II</td>
<td>4</td>
</tr>
<tr>
<td>PSY 140</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>______</td>
<td>Humanities/Social Science Elective</td>
<td>______</td>
</tr>
</tbody>
</table>

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**First Year, Summer I Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS 203</td>
<td>Introduction to Advanced Life Support I</td>
<td>4</td>
</tr>
<tr>
<td>EMS 205</td>
<td>Introduction to Advanced Life Support II</td>
<td>2</td>
</tr>
</tbody>
</table>

6

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**First Year, Summer II Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EMS 110</td>
<td>Patient Assessment</td>
<td>3</td>
</tr>
<tr>
<td>EMS 120</td>
<td>Airway Management and Ventilation</td>
<td>3</td>
</tr>
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</table>

6

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**Second Year, Fall Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS 140</td>
<td>Trauma Systems and Mechanisms of Injury</td>
<td>5</td>
</tr>
<tr>
<td>EMS 210</td>
<td>Medical Emergencies I</td>
<td>4</td>
</tr>
<tr>
<td>EMS 220</td>
<td>Paramedic Concepts and Practices I</td>
<td>6</td>
</tr>
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</table>

15

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**Second Year, Spring Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS 211</td>
<td>Medical Emergencies II</td>
<td>4</td>
</tr>
<tr>
<td>EMS 221</td>
<td>Paramedic Concepts and Practices II</td>
<td>6</td>
</tr>
<tr>
<td>EMS 136</td>
<td>Special Concepts – Assessments Based Management Seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

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Total Credits Required: 68

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**Respiratory Therapy, Associate in Applied Science (RESP)**

The Respiratory Therapy curriculum prepares allied health specialists for the management, treatment, testing and care of patients with breathing abnormalities.

All Respiratory Therapy applicants are required to submit a “Criminal History Record Information Report” and be free of any conviction of elder or child abuse for 10 years prior to beginning the first clinical course. Admitted students must pass a drug test prior to beginning the program. This service will be provided at a special college planning for advisement and registration for clinical.

All Respiratory Therapy students will need to have on file in the Health Center the results of a complete physical examination including: laboratory tests, a complete blood count, serology and TB testing. Additionally, these students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine. Certain manual dexterity and sensory skills are necessary for successful completion of the Respiratory Therapy program.
Health problems that can interfere with the applicant’s ability to demonstrate achievement of program competencies are considered individually.

Upon successful completion of this program, students should be able to:
• Administer therapeutic medical gases.
• Administer cardiopulmonary resuscitation.
• Provide appropriate mechanical assistance to support respiration when necessary.
• Administer drugs that are given through inhalation procedures.
• Maintain all equipment used in respiratory support.
• Perform diagnostic pulmonary function testing and blood-gas analysis.
• Exercise judgment and accept responsibility in therapeutic procedures based on observation of patients and knowledge of anatomy, physiology, pharmacology and clinical medicine.

Students must progress through the curriculum in sequence. Students must maintain a GPA of 2.0 to remain in the program. Credits for BIO 117 or BIO 150 and BIO 118 or BIO 151 must be current within five academic years of the date of beginning the program. Students must achieve a grade of “C” or better in BIO 117 or 150, BIO 118 or 151 and CHE 110.

Admission to the program is dependent on achieving the satisfactory scores on the Health Occupations Basic Entrance Test (HOBET); and additionally meeting minimum SAT/ACT requirements or a GPA of 2.5 in certain “pre-requisite” courses (see the DCCC Admissions office description of the special admission requirements and procedure section).

Any remediation in English and reading must be satisfied before beginning the program. Students who fail or withdraw from a respiratory therapy course and wish to repeat said course must:
§ Have a GPA of 2.5.
§ Petition for readmission is made through the Respiratory Therapy department, not the College Admissions office. Readmission to the program is on a space available basis and only if the student can graduate within two years of his/her initial class. If a student is granted reentry into the program at his/her exit point, an objective evaluation will be used to determine if the placement of the student within the curriculum is appropriate. Upon readmission to the program, the student must complete the program within two years following the graduation of his/her initial class.

The Respiratory Therapy program is accredited by the Committee on Accreditation for Respiratory Care (CoARC), 1248 Harwood Rd., Bedford, Texas, 76021-4244, 817-283-2835, www.CoARC.com.

The Pennsylvania State Board of Medicine reserves the right to deny a license to any candidate who has been convicted of a felony or any offense relating to the use or sale of alcohol or controlled substances in Pennsylvania or any other state.

In addition to normal tuition and fees, respiratory therapy students are required to purchase uniforms, insurance and miscellaneous supplies. Upon completion of the two-year program with a grade of “C” or better in all respiratory therapy courses, the degree of associate in applied science is awarded. The graduate is immediately eligible for the Entry-Level Certification Examination and after passing the Entry-Level Certification Examination, the student is eligible for the Advanced Practitioner’s Examination. Upon successful completion of the Advanced Practitioner’s Examination, the credential Registered Respiratory Therapist is awarded.

### Pre-Requisite Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100</td>
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<tr>
<td>MAT 100</td>
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</tr>
<tr>
<td>CHE 110</td>
<td>4</td>
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### First Year, First Semester

<table>
<thead>
<tr>
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<tr>
<td>RTH 100</td>
<td>4</td>
</tr>
<tr>
<td>RTH 101</td>
<td>4</td>
</tr>
<tr>
<td>BIO 150</td>
<td>4</td>
</tr>
<tr>
<td>ENG 112</td>
<td>3</td>
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### First Year, Summer I Semester

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<tr>
<th>Course</th>
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</tr>
</thead>
<tbody>
<tr>
<td>RTH 104</td>
<td>5</td>
</tr>
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### First Year, Summer II Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTH 105</td>
<td>5</td>
</tr>
</tbody>
</table>

### Second Year, Fall Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTH 200</td>
<td>3</td>
</tr>
<tr>
<td>RTH 201</td>
<td>6</td>
</tr>
<tr>
<td>RTH 204</td>
<td>2</td>
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<tr>
<td>AHM 220</td>
<td>1</td>
</tr>
</tbody>
</table>

### Second Year, Spring Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTH 202</td>
<td>3</td>
</tr>
<tr>
<td>RTH 203</td>
<td>6</td>
</tr>
<tr>
<td>RTH 205</td>
<td>2</td>
</tr>
<tr>
<td>Humanities elective</td>
<td>3</td>
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</tbody>
</table>

### Second Year, Summer I Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTH 206</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total Credits Required: 80**

## Small Business Management, Associate in Applied Science (BUSC)

The Small Business Management program is designed to prepare students in both operational and skill aspects of the small enterprise. Such preparation will equip students with specific areas of skills or management to either enter an existing small firm or begin their own entrepreneurial enterprise.

Courses are designed so that the student, through logical steps, understands the principles unique to small business operation. The 60-61 credit program leads to the awarding of the associate in applied science degree.

Practical knowledge in small business management, finance, marketing, sales, advertising and supervision are designed to prepare students for entry-level needs. Generally, transfer is not intended through this program. The associate dean, business/computer information systems, should be consulted when considering use of credits for transfer. College-sponsored Experiential Learning may be taken for credit while working in a small business with specific managerial duties.

Upon successful completion of this program, students should be able to:
• Use terms and tactics within the small business environment.
• Be able to develop a marketing plan.
• Analyze and resolve problems involving financial statement comparisons.
• Create advertising promotions appropriate to the small business.
• Demonstrate the skills necessary to operate office equipment commonly used in the small company.
• Show proficiency in microcomputer applications within the management and operating needs of the small business environment.
• Understand personal qualities needed to function effectively with individuals in supervision, evaluation and control.
• Develop effective communication to administer policy both internally and externally.
Surgical Technology, Associate in Applied Science (ORT)

The Surgical Technology program prepares students to function as health team members under the supervision of registered professional nurses or licensed physicians. The program includes courses in general and technical education. Selected clinical experiences are provided in local hospitals under the supervision of a member of the surgical technology clinical facility. The Surgical Technology program is accredited by the Accreditation Review Committee for Surgical Technology (ARC-ST). Upon completion of the program, students are eligible to sit for the National Certification Examination for Surgical Technologists.

All Surgical Technology applicants are required to submit a "Criminal History Record Information Report" and a Child Abuse Clearance form. Students who have been convicted of a prohibitive offense contained in Act 13 and/or Act 169 (a detailed list is available for review in the Admissions and Allied Health Offices) may not be able to complete their studies because clinical experiences needed for course/program success may be prohibited. If a student cannot complete their clinical studies, they will not be accepted into the Surgical Technology Program.

This program prepares graduates for beginning level positions in the operating room, central processing department, dialysis unit, ambulatory surgery center, endoscopy or interventional procedure unit. In addition to normal tuition and fees, the surgical technology student is required to purchase protective eyewear and regulation shoes. AHM 220 (Applied Microbiology) and remediation in English, math and reading must be satisfied before beginning AHS 100. Students who fail or withdraw from a surgical technology course and wish to repeat that course must:

- Have a GPA of 2.5.
- Petition for readmission through the Surgical Technology department, not the College Admissions office. Students may repeat the surgical technology courses only once! Students may "wait out" of the program only a total of three years beginning with the last semester attended in surgical technology.

All Surgical Technology students who have a course with a clinical component will need to have on file in the Health Center the results of a complete physical examination including: laboratory tests, a complete blood count, serology and a 9-panel drug screen, and TB testing. A complete physical examination is required prior to taking the first surgical technology courses (AHS 100 and 101). Additionally, students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine. Second-year surgical technology students are required to have a record of a physical examination prior to the beginning of the third term. Students are responsible for their own transportation to and from the clinical area. Full CPR certification is required for all students before entry into clinical courses. You must submit a photocopy (both sides) of "Health Care Provider" (American Heart Association at 610-940-9540, which is renewable every two years) or "Course for the Professional" (American Red Cross at 610-566-4580, which is renewable annually) to the College Health Nurse prior to the first day of class. “BCLS” and Heart Saver” are not acceptable! Certification must be inclusive from September 1 through June 30 of each year.

Certain manual dexterity and sensory skills that enable the student to competently perform required technical skills are necessary for successful completion of the Surgical Technology program. Health problems that can interfere with the applicant's ability to demonstrate achievement of program competencies are considered individually.

Credits for BIO 150 and BIO 151 must be current within five academic years of the date of beginning the first clinical course.

Upon successful completion of this program, the student, under direct supervision of a registered professional nurse or licensed physician, should be able to:

- Identify the preoperative patient care concepts and non-sterile and sterile responsibilities of the surgical technologist in the care of surgical patient during preoperative case management.
- Apply intraoperative patient care concepts during basic, intermediate and advanced surgical interventions.
- Actively engage in the non-sterile and sterile responsibilities of the surgical technologist in the operating room.
- Identify the postoperative patient care concepts and non-sterile and sterile responsibilities of the surgical technologist during postoperative case management.
- Integrate concepts of professional management, self management and workplace management into the role of the surgical technologist.

Students may be dropped from the curriculum for violation of patient safety and/or behavior inconsistent with professional standards pending the outcome of the appeal process.

An associate in applied science degree will be awarded upon successful completion of the required program with a "C" or better in all surgical technology courses.

### See Electives Listing, Page 74.

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHS 100</td>
<td>5</td>
</tr>
<tr>
<td>AHS 101</td>
<td>4</td>
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<tr>
<td>BIO 150</td>
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<td>AHM 104</td>
<td>3-4</td>
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<tr>
<td>AHM 233</td>
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</table>

**Total Credits Required: 60-61**

A certificate program is also available. See Page 71.
**Technical Studies, Associate in Applied Science (TSTU)**

The Technical Studies degree program is designed to provide recognition for work and life experience while assisting individuals in their preparation for career advancement or change. This program is designed to provide skills for personal, professional, and community improvement. The program is highly individualized and flexible. As many as 20 credits may be awarded for work and life experience including military experience, trade/proprietary school preparation, apprenticeship programs, structured on-the-job training and the like.

Graduates will be awarded the associate in applied science degree upon successful completion of this program. Technical Studies has been designed as a first-degree program and therefore cannot be pursued as a second degree at DCCC.

Upon successful completion of this program, students should be able to:

- Formulate an educational plan designed to accomplish a personal/professional goal.
- Demonstrate an attitude of responsibility to self, employer and community.
- Communicate effectively in interpersonal and occupational activities.
- Advance in a career, building on already acquired skills and competencies.
- Display increased technical knowledge and skills.
- Demonstrate the comprehensive mathematical, scientific, physical, social and psychological skills necessary for personal career growth.
- Present technical information in oral, written and graphical form.

**Technical Core:**
Up to 20 credit-hours approved for prior work and life experience such as:
- *Apprenticeship Training*
- *Military Training*
- *Trade/Proprietary Education*

**General Education:**
Completion of a minimum of 21 credit hours as follows:
- English Composition 1 .............................................. 3
- English Composition II .......................................... 3
- *Mathematics/Accounting ......................................... 6-8
- Natural Science Elective ........................................... 3-4
- Social Science ...................................................... 3
- **“Humanities Elective” ........................................... 3

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NOTE: Total Credits Required (minimum) to satisfy this degree: 60

*Any course substitution to an approved Personal Education Plan must be approved by a Technical Studies advisor, prior to course registration.*
Professional Accounting, Certificate of Competency (ACC)

This program is designed for qualified college graduates interested in a career in accounting. The demand for qualified people in public accounting is great. Advancement in the field is limited only by the individual’s ability and is very rapid for the highly qualified. This program offers students the specific education needed to sit for the Certified Public Accountant's examination. Those individuals without a bachelor's degree may enroll in this program; however, the bachelor's degree is required to sit for the CPA exam.

Upon successful completion of this program, students should be able to:
• Discuss the ethical considerations facing the professional accountant in today’s business environment.
• Explain, measure and report income and the content, purposes and limitations of a balance sheet.
• Identify and explain the accounting significance of transactions and events that cause the balance in owner’s equity to change.
• Discuss the environmental factors and underlying theoretical structures related to the accounting discipline.
• Develop an audit program and perform each of the steps in that program.
• Discuss the ethical considerations facing the professional accountant in today’s business environment.

The program requires 18 credits of course work consisting of four core courses (12 credits) and two elective courses (6 credits). Students who lack adequate foundation courses are required to take the following courses:

**Core Curriculum**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACC 111</td>
<td>Financial Accounting</td>
</tr>
<tr>
<td>ACC 112</td>
<td>Managerial Accounting</td>
</tr>
<tr>
<td>ACC 251</td>
<td>Intermediate Accounting I</td>
</tr>
<tr>
<td>ACC 252</td>
<td>Intermediate Accounting II</td>
</tr>
<tr>
<td>ACC 253</td>
<td>Advanced Accounting</td>
</tr>
<tr>
<td>ACC 254</td>
<td>Auditing</td>
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**Electives**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 115</td>
<td>Computerized Accounting</td>
</tr>
<tr>
<td>ACC 199</td>
<td>Co-op/Internship</td>
</tr>
<tr>
<td>ACC 210</td>
<td>Federal Income Tax Accounting</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Elementary Statistics</td>
</tr>
<tr>
<td>BUS 243</td>
<td>Legal Environment of Business</td>
</tr>
</tbody>
</table>

**Total Credits Required: 18**

An Associate in Applied Science degree is also available. See page 32.

Automotive Technology I, Certificate of Competency (AUT)

This certificate is designed to prepare the student for entry-level positions in the occupational specialty of automotive technician. The Certificate of Competency in Automotive Technology I will be awarded upon successful completion of the minimum competencies as outlined below. Program completers will be prepared to seek positions as entry-level automotive service technicians and automotive mechanics.

Upon successful completion of this program, students should be able to:
• Identify tool and equipment nomenclature.
• Adhere to tool safety regulations.
• Explain the Occupational Safety and Health Act (OSHA) and the "right to know."
• Utilize electronic and service manuals.
• Define the overview of the automobile and its major components.
• Install electronic pollution controls.
• Test, service and repair electronic pollution controls requirements.
• Repair electronic braking systems.
• Explain testing, service and repair requirements for electronic braking systems.
• Identify electronic controlled trip computers
• Install warning, security, and sound systems.
• Prepare engines for removal.
• Disassemble, inspect, and clean engine parts.
• Inspect and measure crankshaft.
• Install bearing, pistons, piston rings, and crankshaft.
• Perform reconditioning of valve seats and valve stem seals.
• Remove the camshaft.
• Install timing components, gears chain, and belts.
• Inspect and service oil pumps.

**Course** | **Credits**
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AUT 100</td>
<td>Introduction to Automotive Service Operation and Shop Practices</td>
</tr>
<tr>
<td>AUT 101</td>
<td>Automotive Electricity and Electronics</td>
</tr>
<tr>
<td>AUT 102</td>
<td>Automotive Engines</td>
</tr>
<tr>
<td>AUT 103</td>
<td>Brake Systems</td>
</tr>
<tr>
<td>AUT 114</td>
<td>Steering and Suspension</td>
</tr>
<tr>
<td>AUT 115</td>
<td>Fuel I &amp; II</td>
</tr>
</tbody>
</table>

**Total Credits Required: 20**

Automotive Technology II, Certificate of Competency (AUTC)

This certificate is designed to prepare the student for above entry-level positions in the automotive service industry. The Certificate of Competency in Automotive Technology II will be awarded upon successful completion of the competencies outlined below.

Upon successful completion of this program, students should be able to:
• Define OBD (On-Board Diagnostic).
• Utilize testing tools to retrieve malfunction codes from the computer system.
• Identify importance of emission controls and emission control procedures.
• Test input sensors, and actuator sensors.
• Identify EGR (Exhaust, Gas, and Recirculation) Systems.
• Measure, assemble and install new parts as required.
• Differentiate between 4-wheel drive and all wheels drive vehicles.
• Service 4-wheel drive and all wheels drive vehicles.
• Identify hydraulic systems.
• Remove, overhaul and reinstall transmission/transaxle in vehicles.
• Restore units back to manufacturer's specifications.
• Demonstrate using two or more 02 sensors.
• Solve case studies of vehicle engine parts and malfunctions.
• Utilize AC and DC test instruments.
• Recognize delayed lighting and running lamps.
• Install and repair automatic locks, security and anti-theft devices.
• Install and repair radios and speakers systems.
• Replace and repair electronic heat grids on rear windows.
• Utilize automatic vehicle leveling systems

Course Credits
AUT 121 Automotive Engine Performance .................................. 3
AUT 201 Automotive Chassis and Security Systems .......................... 2
AUT 150 Automotive Air Conditioning ........................................... 2
AUT 151 Automotive Ignition System, Identification and Diagnosis .... 2
AUT 152 Computer and Emissions Systems .................................... 2
AUT 153 Manual Transmission/Transaxle and Chassis ..................... 3
AUT 200 Automotive Automatic Transmission/Transaxle ................... 4
AUT 123 Power Train Controls ...................................................... 2

Total Credits Required: 21

Residential Carpentry, Certificate of Competency (CPTC)

This certificate is designed to prepare the student for entry-level positions in the occupational specialty of residential carpentry. The Certificate of Competency in Residential Carpentry will be awarded upon successful completion of the competencies as outlined below. Students who complete the program will be prepared to seek positions as entry-level carpenters. The program focuses on carpentry involving basic carpentry processes. Relevant theory and skills in solving basic mathematical problems, blueprint reading, and the safe use of hand tools, power tools and other equipment and materials of the trade will be addressed.

Upon successful completion of this program, students should be able to:
• Interpret plans.
• Lay out carpentry procedures.
• Identify the different structural components and their sequence as it relates to construction.
• Interpret building specifications and regulations as they relate to building construction.
• Estimate carpentry materials and labor costs to complete a project.
• Complete a rough carpentry project.
• Frame a structure.
• Perform finished carpentry work.
• Apply roofing material.
• Erect dry wall.
• Define roofing and siding terms.
• Describe and apply roofing felt, organic and/or fiberglass asphalt shingles and roll roofing.
• Apply aluminum and vinyl siding.
• Identify flash valleys, sidewalls, chimneys, and other roof obstructions.
• Cut and bend roll aluminum to fit exterior trim and soffits.
• Apply and cut fantfoil exterior insulation.
• Estimate needed roofing and siding materials.
• Describe and apply wood shingles and shakes to roof underlayment.
• Flash hip-valley and ridge roofs according to specific application.
• Apply wood shingles and shakes to siding.
• Apply T 111 siding (registered name of the manufacturer).
• Explain the uses and applications of brick, stone and stucco siding.
• Estimate required amounts of roofing and siding.

### Course and Credits

**Course** | **Credit**
--- | ---
CPT 100 Introduction of Carpentry | 4
CPT 101 Concepts of Carpentry Design | 4
CPT 200 Advanced Framing Design | 4
TCS 100 Blueprint Reading | 3
OCS 102 International Code Council (ICC) Uniform Construction Code (UCC) | 3
CPT 160 Introduction to Roofing and Siding | 4
CPT 260 Advanced Roofing and Siding | 4

Total Credits Required: 26

**Electives**

**Course** | **Credit**
--- | ---
CPT 153 Advanced Furniture Building | 2
CPT 150 Introduction to Cabinetmaking | 2
CPT 151 Furniture Building | 2
CPT 152 Home Remodeling/Additions | 2

Finish Carpentry, Certificate of Competency (CPTC)

This certificate will provide the student with the technical skills and knowledge to lay out, cut, fabricate, erect, install and repair wooden structures and fixtures using hand and power tools. The program includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques and applicable codes and standards. The program prepares individuals for positions such as Finish Carpenters, Construction Estimators, Construction Planners and/or First-Line Supervisors.

Upon successful completion of this program, students should be able to:
• Select the proper window and door sizes based on rough openings and manufacturers specifications.
• Install windows on "New" house construction, replacement windows, and additional window placement.
• Select various types of window glazing, glazing materials, and installing glass.
• Construct and set door frames.
• Identify and install door and window hardware.
• Describe various types, sizes, and uses of drywall panels.
• Describe hardware, adhesives, and applications of drywall.
• Make single and multi-ply drywall applications to interior walls and ceilings.
• Reinforce and conceal joints with tape and compound.
• Identify standard and crown moldings and their applications.
• Install window trim, including stools, aprons, jamb extensions, casings, and stop beads.
• Identify various types of staircases and balconies and their terminology.
• Perform mathematical calculations to determine proper tread rise and run of a staircase.
• Layout and fabricate plain, square cut, mitered and housed stringers and stair horses.
• Layout and fabricate platforms and landings.
• Construct and install balusters, newels, and handrails.
• Fabricate and install balcony skirts.
• Utilize existing building codes to comply with code enforcement regulations.
• Describe the types, sizes, and grades of hardwood flooring.
• Apply strip, plank, and parquet flooring.
• Estimate quantities of wood finish flooring required for various installations.
• Apply underlayment and resilient tile floor.
• Apply special underlayment and pre-finished floor systems.
• Finish wood flooring.

DELTAORE COUNTY COMMUNITY COLLEGE
CNC Programming - Lathe and Mill, Certificate of Competency (CNC)

This certificate is designed to prepare the student for entry-level positions in the occupational specialty of manual programmer of CNC lathes and mills. The Certificate of Competency in CNC Programming - Lathe and Mill will be awarded upon successful completion of the minimum competencies as outlined below.

Upon successful completion of this program, students should be able to:

• Via manual methods interpret and convert basic (part drawings) in order to produce proceduralized manufacturing process/operation, workholding, tooling documentation sheets, and job plans for a CNC mill (router on similar machine tool), and a CNC lathe.
• Apply principles of mathematics, engineering print interpretation and geometric analysis to describe part datum’s, surfaces, and feature locations in terms of 2 and 2 1/2 axes machine tool positions.
• Prepare and proof a written manuscript for the production of parts on a CNC mill, (or similar machine) or a CNC lathe.
• Utilize mathematical calculations, and concepts of geometric relationships combined with techniques, hardware, software menus and computer system practices associated with a Computer Aided Machining/Distributed Numerical Control (CAM/DNC) system to manually write, save, retrieve and transfer CNC machine tool programs.
• Size conductors, receivers, reservoirs, and accumulators.
• Construct and demonstrate use of control devices, circuits and systems.
• Develop objectives and goals of a machining manufacturing project.
• Prepare schedules and allocate resources.

Students seeking to pursue this certificate program must meet the following prerequisites:


Total Credits Required: 21

Computer Aided Drafting Certificate of Competency (DDTC)

As we begin the twenty-first century, the design industry is looking for a new breed of workers. They must be computer-savvy self-starters who can speak and write well, do most of the projects, cross-functional teams, switch roles within or across companies without a backward glance, and they must be fearless of the changes. Trained workers have an emerging technology. In these courses, students will explore Architecture, Engineering and Construction (AEC) and other specialized fields as they develop computer-aided drafting skills. They will learn to manage computer systems for drawing production, information storage, retrieval and communication in the electronic world.

This program is designed, primarily, to serve as computer training for individuals who have previous experience as manual "board" drafters and who already possess a working knowledge of technical drawings. The program schedule is designed to be able to be completed in one academic year (including one summer class) attending 2 evenings per week. During the introductory summer class TDD 225, students with prior drafting experience should apply to the DCCC Assessment Center to have previous drafting experience evaluated for credit by portfolio assessment and the course TCC 112 Technical Graphics/CAD.

Upon successful completion of this program, students should be able to:

• Create two- and three-dimensional technical design models and drawings to document solutions for defined customer problems.
• Use CAD tools in applying the principles of descriptive geometry and the techniques of graphic construction to the process of documenting design intent.
• Execute computer generated plane and 3D geometric forms, as well as object viewing techniques, to describe and present a design concept.
• Apply CAD tools and techniques in the execution of working, multi-view, assembly and 3D model drawings.

Total Credits Required: 15

*Individuals with no prior drafting experience should begin the program sequence with TCC 112 in the Spring semester and will require two additional semesters to complete the course schedule.

Computer Aided Machining Lathe, Mill and EDM, Certificate of Competency (CAM)

This certificate is designed to prepare the student for entry-level positions in the occupational specialty of Computer Aided Manufacturing/Machining in Lathe, Mill and EDM programming and operations. Concepts covered include CAM as a design, management and operational tool, principles of EDM technology, and production utilizing EDM equipment. Students will learn how...
to maximize efficiencies and effectiveness via software and equipment integration. Learning will be further developed and reinforced with the opportunity for work-based experience. The Certificate of Competency in Computer Aided Machining (CAM) Lathe, Mill and EDM will be awarded upon successful completion of the minimum competencies as outlined below. Upon successful completion of this program, students should be able to:

• Interact with hardware/software in order to create and manipulate various views as a means to appropriately displaying a graphical/cam model.
• Plan and demonstrate steps for creating and modifying (manufactured) part models.
• Structure a plan for approaching multi-part, same set-up, tool path generation for difficult to machine piece-parts.
• Generate tool paths for creating cross drilling, face contouring, and c-axis contours on mill-turn machine tool.
• Set-up and operate a ram and a wire EDM machine tool in order to achieve desired inspection/quality characteristics on a finished part.
• Utilize CAM software programming options to modify cutting parameters and settings, as well as part geometry at various points on a contour.

Students seeking to pursue this certificate program must meet the following prerequisites:


Course Credits
MTT 129 Solids (CAM) Modeling ........................................... 3
MTT 219 CAM Solids I ..................................................... 3
MTT 229 CAM Solids II ................................................... 3
MTT 230 Electrical Discharge Machining ............................ 4
MTT 199 Co-op/Internship ............................................... 2

Total Credits Required: 15

Electrical, Certificate of Competency (ELT)

The Electrical program is designed to train individuals in the safe, proper and efficient installation of electrical equipment and associated wiring in residential, commercial and industrial settings. This program stresses all of the basic elements required in the types of installations most often encountered by the electrician including direct current applications in residential, commercial and industrial settings. The National Code, its interpretation and application are included in every facet of the program. The curriculum has been approved by the U.S. Department of Labor, Bureau of Apprenticeship and Training, for the 144 hours of classroom training required in an electrical apprenticeship program.

Upon successful completion of this program, students should be able to:

• Demonstrate knowledge of OSHA guidelines for the electrical profession.
• Interpret the National Electrical Code (NEC) in practical applications.
• Perform calculations that are required of an electrician.
• Install conductors that are properly sized so as to avoid overload and voltage drop and assure proper system operation.
• Define and install various electrical services.
• Install power transformers in various voltage configurations.
• Lay out an electrical installation for residential and commercial uses.
• Utilize the various electrical meters and measuring devices used in the field.

upon successful completion of the program, students should be able to:

• Install basic low-voltage and signal systems.
• Prepare electrical drawings as per NEC and standard wiring practices.
• Calculate Feeder loading, conductor size and required over-current protection.
• Install motors, motor controllers and generators.
• Trouble-shoot electrical systems and components.

Course Credits
ELT 100 Introduction to Electricity .................................. 4
ELT 101 Residential Wiring .............................................. 4
ELT 205 Advanced Residential Wiring ............................... 4
ELT 152 Electrical Code .................................................. 2
ELT 206 Commercial Wire .............................................. 4
ELT 207 Industrial Wire .................................................. 4
TEL 101 DC Analysis ..................................................... 4
TCS 141 Construction First Aid Safety ............................. 3

Total Credits Required: 29

Construction Supervision Certificate of Competency (CSUP)

The Construction Supervision program is designed for individuals with an established background in the construction trades who are seeking advancement to supervisory leadership positions. The core courses will develop an appreciation of the importance of good communication skills, human relations skills and the fundamental challenges of achieving organizational goals through the efforts of others. Emphasis is placed on understanding the legal, contractual and organizational practices that form the basis of an effective construction organization. The Construction Supervision electives provide an additional component of focused activity relevant to the student’s particular trade background and professional goals. Typical job titles serviced by this curriculum include Construction Foreman, Construction Group Leader and Site Superintendent.

Upon successful completion of this program, students should be able to:

• Manipulate technical information related to methods and materials of construction.
• Explain the functions of standard construction documents and procedures.
• Follow a standard protocol for the preparation of project data.
• Discuss characteristics of effective leadership in achieving results through the effort of others.
• Track time duration information for the completion of an activity.
• Explain the application of common laws and regulations pertaining to site activity.
• Define the elements of effective human relations on the job site.
• Identify the specific components of a site management system.
• Describe the critical elements of a job site safety program.
• Define construction closeout procedures.

First Semester Credits
TCC 111 Technical Communication .................................. 3
TCS 100 Construction Specifications and Blueprint Reading .... 3
TCS 108 Construction Supervision ..................................... 3
TCS 141 Construction Supervision Elective .......................... 3

Total Credits Required: 12

Second Semester Credits
TCS 109 Construction Project Administration ....................... 3
MAT 110 Technical Math I .............................................. 4
TCS 141 Construction First Aid and Safety ........................ 3

Total Credits Required: 13
Electronic Commerce, Certificate of Competency (ECMC)

Electronic Commerce is the advertising, selling and buying of products and services—both retail to consumers, and wholesale, from business to business through the Internet. The certificate program in Electronic Commerce is intended for small business owners who want to engage in electronic commerce to develop and deploy e-business solutions. The emphasis in the program is on the development of sound business and computer skills to participate in the growing world of electronic commerce. The program teaches individuals how to build an attractive Web site, how to attract people to the Web site, what to do with customers once they are on the Web site and how to provide customer service through the Internet.

Upon successful completion of this program, students should be able to:
• Discuss electronic commerce principles and concepts.
• Identify terms used in electronic commerce and related technologies.
• Discuss the global impact of electronic commerce on business.
• Develop and maintain a web page to market a product or service.
• Apply business principles to electronic commerce.
• Use computer software and applications to enhance business operations.
• Develop a supply chain strategy for a business operation.
• Discuss legal, political and ethical issues associated with an international business that engages in electronic commerce.
• Develop a marketing plan for a business engaged in electronic commerce.

Course Credits
BUS 102 Introduction to E-Commerce ........................................... 3
BUS 234 Electronic Marketing .................................................. 3
BUS 235 Supply Chain Management ......................................... 3
IMM 100 Interface Design Using Director .................................. 3
IMM 120 Web Page Development .............................................. 3
_____199 Co-op/Internship or other BUS/DPR/IMM Elective ............. 3

Total Credits Required: 18

An Associate in Applied Science degree is also available. See page 37.
Emergency Services Technology, Certificate of Competency, ESMC

The Emergency Services Technology, Certificate of Competency prepares students to function in various disciplines that incorporate similar skills. Building on the pre/co requisite of being an Emergency Medical Technician or Paramedic, students will learn emergency management and patient care techniques that will provide them with the opportunity to become a valuable part of the emergency services community. In addition, the general education offerings will benefit students as they work toward an AAS degree.

According to the Emergency Medical Services Advisory Committee, which is made up of Emergency Medical Services personnel in Delaware and Chester counties, the job market for Emergency Medical Services workers is steady. The Department of Labor projects a 19% growth in the need for EMT's through 2016. This data indicates that there is an ongoing need for well-trained Emergency Services personnel. In both Delaware and Chester counties, there are pre-hospital service providers as well as fire company / ambulance corps that serve the residents through the 911 system. These Emergency Service organizations mandate that their employees maintain current professional certifications and understand the interactions among agencies such as homeland security, police, and emergency management. This Certificate of Competency enables students to meet these requirements.

The mission of the college is to “offer educational programs and services that are accessible, comprehensive, community centered and flexible in order to enhance the development of the community and residents of its service area”. This curriculum is geared towards the individual who has a desire to enter the field of Pre-Hospital Service. This market is also integrated with the certified Emergency Medical Technician discretion for student entrance.

The new curriculum will utilize existing courses.

First Semester:

- EMS 100 Emergency Medical Technician – Basic (7 credits)
- EMER 105 Incident Management (OR) (3 credits)
- EMER 110 Emergency Planning (3 credits)
- NUS 102 Nursing Mathematics (1 credit)

First Semester Total: 11 credits

Second Semester:

- EMS 120 Airway Management and Ventilation (OR) (3 credits)
- EMS 110 Patient Assessment (3 credits)
- CHE 105 Technical Chemistry (OR) (3 credits)
- ESS 100 Earth Science (4 credits)
- AHN 106 Patient Care Assisting Techniques (4 credits)

Second Semester Total: 10-11 credits

Total – 21-22 credits

Students interested in being a certified EMT will need to complete a criminal background check.

Entrepreneurship – Certificate of Competency (BUSE)

The Certificate in Entrepreneurship was created to meet the needs of students who want to develop and run their own companies or engage in entrepreneurship management practices. Through courses such as Introduction to Entrepreneurship, Financial Planning Business Communications, and Law for the Entrepreneur, students gain insight into what skills are needed to become an Entrepreneur. The program is intended to integrate key requirements of any entrepreneurial effort. It requires a minimum of 22 credit hours and is comprised of seven courses.

The certificate program is designed to prepare students in both operational and skill aspects of the small enterprise. Such preparation will equip students with specific areas of skills or management to either enter an existing small firm or begin their own entrepreneurial enterprise.

Courses are designed so that the student, through logical steps, understands the principles unique to small business operation. Successful completion of 22 credits may lead to a certificate of competency in Entrepreneurship. Practical knowledge in small business management, finance, marketing, sales, advertising and supervision are designed to prepare students for entry-level needs. Generally, transfer is not intended through this program. The Dean, Business/Computer Information Systems, should be consulted when considering use of credits for transfer.

College-Sponsored Experiential Learning may be taken for credit while working in a small business with specific managerial duties.

Upon successful completion of this program, students should be able to:

- Write a Business Plan
- Use terms and tactics within the small business environment
- Be able to develop a marketing plan
- Analyze and resolve problems involving finance
- Understand personal qualities needed to function effectively with individuals in supervision, evaluation and control
- Understand current legal issues involved in starting and operating a business
- Develop effective communication to administer policy both internally and externally

Course | Credits
--- | ---
BUS 105 Introduction to Entrepreneurship | 3
BUS 106 Entrepreneurship Seminar | 1
BUS 130 Business to Communications | 3
BUS 211 Supervision | 3
BUS 230 Principles of Marketing | 3
BUS 233 Financial Planning | 3
BUS 243 Legal Environment of Business | 3
Business Elective | 3

Total Credits Required: 22

Health Unit Coordinator, Certificate of Competency (AHU)

The Health Unit Coordinator certificate program prepares students to participate as members of the health team in performing clerical skills essential for the effective management of clinical units within health institutions and agencies. Applicants are required to have a high school diploma or equivalent. All Health Unit Coordinator applicants are required to submit a "Criminal History Record Information Report" and "Child Abuse History Clearance". Students who have been convicted of a felony or other prohibited offense may be unable to complete their studies because clinical agencies may not permit participation in clinical experiences.

All Health Unit Coordinator students will need to have on file in the Health Center the results of a complete physical examination including: laboratory tests, a complete blood count, serology and a 9-panel urine drug screen and TB testing prior to beginning the clinical component of the program. Additionally, students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine.

Certain manual dexterity and sensory skills that enable students to competently perform required technical skills are necessary for successful
completion of the Health Unit Coordinator program. Health problems that can interfere with the applicant’s ability to demonstrate achievement of program competencies are considered individually.

In addition to the normal tuition and fees, Health Unit Coordinator students are required to purchase uniforms.

Applicants are required to take college placement tests for English, reading and math skills.

A student in the Health Unit Coordinator program may be removed from the program for behavior incompatible with occupational standards or violation of patient safety/confidentiality pending the outcome of the appeal process.

Students are responsible for their own transportation to and from the clinical area.

Upon successful completion of this program, students should be able to:

- Describe the role of the health unit coordinator as a health-team member.
- Describe the role of health-care facilities in the health-care delivery system.
- Identify the responsibilities of the health unit coordinator within the health team.
- Utilize correctly medical terms, common abbreviations and symbols used in recording and transcribing physician’s orders.
- Demonstrate competence in the performance of health unit coordinator skills.

First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AHM 233</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>DPR 100</td>
<td>Introduction to Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>AHM 100</td>
<td>Orientation to Health Care</td>
<td>3</td>
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</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHM 130</td>
<td>Medical Coding Concepts for Allied Health</td>
<td>3</td>
</tr>
<tr>
<td>AHU 100</td>
<td>Health Unit Coordinator Theory &amp; Technique</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credits Required: 18

A certificate of competency will be awarded to all candidates completing the program of studies with a GPA of 2.0 and a "C" or better in all allied health courses.

**Heating, Ventilation, Air Conditioning and Refrigeration, Certificate of Competency (HVA)**

The Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC&R) occupations program prepares graduates for employment with HVAC&R installation and service contractors and/or facilities maintenance positions. Having achieved the competencies of this program, students are prepared for full-time employment at an entry-level position or, if already in the fields, to advance in their organization.

Upon successful completion of this program, students should be able to:

- Identify the functions of components in residential and light commercial HVAC&R equipment.
- Explain the use of tools and materials in the installation and service of HVAC&R equipment.
- Describe the cycle of operation of residential and light commercial HVAC&R equipment.
- Interpret wiring diagrams.
- Diagnose trouble in operating safety controls.
- Perform specific start-up procedures to ensure operational efficiency and safety of HVAC&R equipment.
- Cite the procedure of heat loss and heat gain load calculations.
- Handle refrigerant and detail potential environment hazards of fluorocarbons.
- Detail the techniques of servicing equipment and start-up to develop service ability and hands-on experience.
- State the techniques of installing equipment.

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<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVA 100</td>
<td>Introduction to HVAC&amp;R Electrical Fabrication</td>
<td>2</td>
</tr>
<tr>
<td>HVA 101</td>
<td>Introduction to Refrigeration and Air Conditioning</td>
<td>2</td>
</tr>
<tr>
<td>HVA 103</td>
<td>Advanced Refrigeration and Air Conditioning</td>
<td>2</td>
</tr>
<tr>
<td>HVA 104</td>
<td>Practical Math HVAC</td>
<td>3</td>
</tr>
<tr>
<td>HVA 106</td>
<td>Basic Piping for Contractors</td>
<td>2</td>
</tr>
<tr>
<td>HVA 200</td>
<td>Advanced HVAC Electrical Fabrication</td>
<td>2</td>
</tr>
<tr>
<td>HVA 201</td>
<td>Refrigerant Certification</td>
<td>2</td>
</tr>
<tr>
<td>HVA 202</td>
<td>Oil/Gas Burner Service</td>
<td>2</td>
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<tr>
<td>HVA 203</td>
<td>Heat Pump Systems</td>
<td>2</td>
</tr>
<tr>
<td>HVA 204</td>
<td>Blueprint Reading for HVAC Technicians</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Credits Required: 21

**Human Resource Management, Certificate of Competency (CHRM)**

According to the 21st Century Report published by Columbia University, human resource management is the second most important indispensable component of corporate performance and competitive advantage today. The first is strategic planning in which human resource management plays a vital role. Today’s rapidly changing business environment is forcing organizations to face many challenges such as workforce diversity, downsizing, shortages of skilled workers in the service industry, and the evolving roles of work and families. The ability to manage people and processes is essential for successful careers in all levels and types of organizations. Organizations realize that to be successful in today’s complex business environment, they must have productive, motivated people. This program provides students with the theories, principles and skills necessary to find, develop and motivate today’s excellent workforce.

This program is designed for those individuals interested in careers in management as well as those currently working in the field of human resource management. It is also designed for those individuals interested in people relations and general management. The focus of the program will be on developing a thorough understanding of the human resource processes of training, employee relations, staffing, and compensation and benefits.

Upon successful completion of this program, students should be able to:

- Demonstrate knowledge and skills in the functional areas of management and leadership including planning, organizing, controlling, problems solving and motivation.
- Demonstrate knowledge and skills in the specialized areas of human resource management including staffing, performance management, employee relations and commitment, compensation and employee development.
- Develop a personal leadership style based on situational, individual and organizational characteristics.
- Develop and implement human resource policies and practices concerning staffing, performance management, employee relations and commitment, compensation and employee development.
- Develop and implement organization change programs and policies.
- Explain and apply organizational behavior and management theories as the basis for effective management practice and policies.
- Develop career objectives and plans in the fields of general management and human resource management.
Industrial Systems Technology, Certificate of Competency (IST)

This certificate is designed to prepare students for entry-level employment as Industrial Systems Technicians with a specialty in areas related to manufacturing and industrial processing industry. Knowledge and skills instruction in this program will deal with various levels of industrial systems equipment where the students will learn how to maintain equipment and to maximize equipment efficiencies and effectiveness. The electro/mechanical knowledge gained will provide students with a background in equipment operation as well as an understanding of systems integration. Theoretical topics will be reinforced with opportunity for the student to become fully engaged in work-based experiences via laboratory experiments and assignments. The Certificate of Competency in Industrial Systems Technology will be awarded upon successful completion of the minimum competencies as outlined below.

Upon successful completion of this program, students should be able to:
• Demonstrate the principles of technical information management and communication.
• Perform the basic mathematical computational skills required of a technician.
• Apply the theory and practices associated with basic electrical circuit installation and troubleshooting.
• Apply the theory of precision measuring and measurement to the solution of typical workplace problems.
• Cite the purpose and classify by type, various pieces of power transmission and mechanical motion equipment.
• Determine specifications associated with equipment parts, installation, repair and replacement.
• Specify and install bearings, belts, chains, gears, coupling, drives, etc.
• Select and apply gaskets, seals, sealants, lubrications and oils.
• Plan, prepare and schedule an activity list associated with job descriptions that will also include safety procedures and all aspects of accident prevention, health and environmental issues.
• Interpret drawings and schematics; properly use hand and power tools and basic electrical instruments while performing industrial equipment maintenance and repair.

Total Credits Required: 18

Interactive Multimedia, Certificate of Competency (IMM)

The Certificate program in Interactive Multimedia trains students in the development of World Wide Web (WWW) pages and Computer-Based Training (CBT) applications that employ a variety of audio and visual media including animation, video and graphics.

Upon successful completion of this program, students should be able to:
• Complete all phases of the multimedia design and development process including instructional design, storyboarding, interface design, media selection, digitizing and evaluation.
• Identify and employ effective features of CBT and WBT.
• Use current software applications to create digital sound, video and animation for inclusion in multimedia programs.
• Create interactive multimedia programs using sophisticated authoring development tools.

Total Credits Required: 15

Latino-American Studies, Certificate of Competency (CLAS)

This program was created in an effort to address this need. It is designed primarily for individuals in careers that interact on a regular basis with the Latino-American population (business, education, government, human and social services, medicine, ministry) as well as anyone wishing to study this increasingly important population.

According to the U.S. Census Bureau, the Latino population is increasing at almost four times the rate of the general population, and, as a result, the United States has become the fastest-growing Spanish-speaking country in the world. The growing influence of Latinos in the workforce and throughout American society signals a need to better understand, serve, and interact with this increasingly important population.

The program focuses on developing background knowledge of the differing experiences, values, and needs of Latinos and a deeper awareness of issues related to Latinos living in the United States to help students make better informed decisions about and collaborate better with this population.

Upon successful completion of this program, students should be able to:
• Describe the historical, political-social, and cultural experiences of Latinos residing in the United States
• Explain and apply course concepts and content to workplace and social situations
• Demonstrate the ability to think critically and examine assumptions concerning issues of stereotypes, prejudice, and intolerance
• Demonstrate the ability to work with information and ideas associated with diversity, including culture, ethnicity, language, race, and religion
• Compare and contrast the relationship between the Latino-American experience and the experiences of other populations residing in the United States
• Present information in writing and orally on issues relating to the Latino-American experience
The program requires completion of three specialized core courses related directly to Latino-American Studies and one of two options that allow for extension and application of the core knowledge within the broader context of diversity and social relations or intercultural verbal communication:

**Core Courses (9 credits of required course work)**

HIS 253  Latino-American History .......................... 3
HIS/SOC 263 Latino-American Political & Social Issues ................. 3
HUM 205  Latino-American Culture .......................... 3

In addition to the core courses, students will select one of the following two certificate completion options depending on their professional and educational needs.

**Sociology Option (9 credits of required course work)**

SOC 110  Introduction to Sociology .......................... 3
SOC 215  Experiences in Diversity .......................... 3
SOC 219  Sociology of Race and Immigration .......................... 3

**Spanish Language Option**

(Successfully complete the following Spanish language courses or demonstrate a minimum competency equivalent to SPA 112 either by completing course work or passing a departmental Spanish equivalency examination)

SPA 102  Elementary Spanish II .......................... 3
SPA 111  Intermediate Spanish I .......................... 3
SPA 112  Intermediate Spanish II .......................... 3

**Total Credits Required:** 9

Spanish Language Option – 9 to 18 credits, depending the level of proficiency at the time the student begins the certificate program

**Machining Operations – Level I, Certificate of Competency (MTC1)**

This certificate is designed to prepare the student for entry-level positions in the occupational specialty of conventional and Computer Numerical Control lathe and milling machine operations.

Upon successful completion of this program, students should be able to:

1. Determine coolant selection, speed, and feed settings in regard to tool material and insert geometry requirements in order to obtain specific surface finish requirements on milled parts.
2. Create internal features to include chamfers, bores, recesses, counterbores, countersinks, grooves and pockets using a milling machine.
3. Set-up and use various style cutters to create form (profile) geometry.
4. Perform geometric/algebraic/trigonometric calculations for setting-up machining, and inspection of parts, to include chamfers, tapers, threads, etc.
5. Review reference materials and develop a process plan, to include job/operations, tooling, and inspection procedures a review of reference materials in order to perform machining of a basic lathe piece-part.
6. Distinguish between the common surface treatments and finishing processes.
7. Relate the classifications of production systems and the impact automation has for each.
8. Elaborate on the principles of Lean Production and the "Factory within a Department" concepts, suggesting their possible impact on the social fabric of the workplace.
9. Summarize the concepts and criteria for reducing costs and increasing productivity on the shop floor.
10. Utilize welding, melting, casting, and molding equipment.
11. Demonstrate appropriate terminology, mechanics, usage, and style while communicating technical information.
12. Develop computer integrated graphical documents to prepare technical correspondence and presentations.
13. Students seeking to pursue this certificate program must meet the following prerequisites:

   - Mathematics for Occupational Technologies (MTT 108), or; Technical Mathematics (MAT 110), or; Print, Layout, and Measurement for Machining (MTT 110), Introduction to Manufacturing (MTT 111), Lathe Operations I (MTT 112), and Milling Operations I (MTT 124).
**Managed Care, Certificate of Competency (AHMC)**

Changes in the health care marketplace with the shift to managed care has created new roles and job opportunities for health care professionals. The Managed Care Certificate program provides students with a comprehensive study of the principles and tools of managed care, with an emphasis on reducing costs, improving outcomes and demonstrating quality in today's dynamic but constrained health care environment. The role of the case manager is explored, as well as other new job opportunities that have emerged. Additionally, this program helps students become personally accountable for their career planning.

Upon successful completion of this program, students should be able to:
- Describe principles, terminology, structure and products of health care management.
- Describe emerging health-care delivery systems and their impact on delivery, financing, practice patterns and the utilization of personnel and services.
- Explain the priorities of managing risk, quality improvement and measuring outcomes.
- Assess issues and trends in health-care management.
- Develop skills for coordination of care and services in managed care settings.
- Analyze the health care delivery system as a multidisciplinary, multifaceted entity with a variety of entry and access points along a continuum of care.

A Certificate of Competency in Managed Care will be awarded at the completion of the required 15 credits with a grade of "C" or better in all courses. Enrollment is limited to students with a background and/or experience in health care.

An Associate in Applied Science degree in Health Care Management is also available. See page 41.

**Medical Assistant, Certificate of Proficiency (CMED)**

The Medical Assistant program prepares students as multi-skilled health care workers who function as assistants to physicians in a variety of ambulatory care settings. The responsibilities of the medical assistant include administrative and clinical duties. The Delaware County Community College Medical Assisting program is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org), upon the recommendation of the Medical Assisting Education Review Board (MAERB). All medical assistant applicants are required to submit a "Criminal History Record Information Report" and be free of any conviction of elder or child abuse for 10 years prior to beginning the first clinical course.

Selected clinical externships will be provided in local medical offices and demanding work assignment. The program is intended for students who seek above entry-level positions.

Upon successful completion of this program, students should be able to:
- Analyze the features of an object and develop a representative sketch using the principles of orthographic projection.
- Interpret line work, dimensions, orthographic views, various section types, auxiliary views, and annotations associated with mechanical drawings.
- Apply appropriate terminology in order to, select, handle, care for, and store tools used to perform bench work, inspection and assembly operations.
- Perform commonly assigned operator clean up and maintenance tasks associated with grinding, sawing and drilling machines.
- Utilize detail drawings, calculations, layout tools, precision measuring instruments and appropriate techniques to prepare parts for manufacture on a lathe and mill and verify part dimensions during inspection procedures.
- Create internal features to include chamfers, bores, recesses, counterbores, countersinks, grooves and pockets using a milling machine.
- Perform geometric/algebraic/trigonometric calculations for the set-up, machining and inspection of parts, to include chamfers, tapers, threads, etc.
- Develop computer integrated graphical documents to prepare technical correspondence and presentations.

**Manufacturing Operations, Certificate of Proficiency (MAN)**

This certificate will provide the student with the necessary skills to seek employment as advanced conventional machine tool operators/machinists in the manufacturing field of Precision Machining. Specific general education courses must be selected in order to be appropriately prepared to secure this certificate. Selected courses will aid in preparing the student to meet a more
health care clinics under the supervision of the allied health faculty. These externships are work/learning experiences for which the student receives no monetary remuneration or other reimbursement.

Medical assistant applicants are required to take college placement tests in math, reading and English skills. Any deficiencies must be remedied prior to registering for Medical Assistant Techniques and Practicum I (AHM 106). Certain manual dexterity and sensory abilities that will enable the student to competently perform required technical skills are necessary for successful completion of the Medical Assistant program. Health problems that can interfere with the applicant’s ability to meet program competencies are considered individually.

All medical assistant students will need to have on file in the Health Center the results of a complete physical examination including: laboratory tests, a complete blood count, serology, a 9-panel urine drug screen, and TB testing prior to beginning the clinical component of the program. Please refer to the pre-entrance medical record health form requirements from the Health Center. Additionally, students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine. Full CPR certification is required. You must submit a photocopy (both sides) of "Health Care Provider" (American Heart Association) which is renewable every two years or "Course for the Professional" (American Red Cross) which is renewable annually. Documentation of completion of the above must be on file in the Health Center prior to entering the Medical Assistant Externship (AHM 199).

Students may be removed from the program for violation of patient safety, confidentiality or behavior incompatible with acceptable standards pending outcome of the appeal process.

Upon successful completion of this program, students should be able to:
- Demonstrate an understanding of the anatomical structure and physiological functioning of the human body and of medical terms descriptive of body systems.
- Identify the business/administrative and clinical duties of the medical assistant.
- Describe the ethical and legal responsibilities of the medical assistant in the health-care delivery system.
- Apply selected principles of biophysical and psychosocial sciences in providing assistance to the physician.
- Maintain business and patient health records.
- Function as an assistant to the physician in medical and/or other clinical settings.

A Certificate of Proficiency will be awarded upon successful completion of the required program with a 2.0 GPA and a “C” or better in all allied health courses. The graduate is then eligible to write the examination for national certification administered through the American Association of Medical Assistants.

In addition to the normal tuition and fees, medical assistant students are required to purchase uniforms and miscellaneous supplies.

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>AHM 233 Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>AHM 104 Body Structure/Function I</td>
<td>3</td>
</tr>
<tr>
<td>DPR 100 Introduction to Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>AHM 106 Medical Assistant Techniques and Practicum I</td>
<td>4</td>
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16 Credits

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>AHM 105 Body Structure Function II</td>
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</tr>
<tr>
<td>AHM 107 Medical Assistant Techniques and Practicum II</td>
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</tr>
<tr>
<td>AHM 130 Medical Coding Concepts for Allied Health</td>
<td>3</td>
</tr>
<tr>
<td>AHM 220 Applied Microbiology</td>
<td>1</td>
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<tr>
<td>ENG 112 English Composition II</td>
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</table>

14 Credits

Third Semester (Summer I)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHM 140 Professional and Communication Issues in Health Care</td>
<td>3</td>
</tr>
<tr>
<td>AHM 185 Medical Office Management</td>
<td>3</td>
</tr>
</tbody>
</table>

6 Credits

(Summer II)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AHM 199 Optional Co-op/Internship</td>
<td>6</td>
</tr>
</tbody>
</table>

6 Credits

Total Credits Required 42

An Associate in Applied Science degree is also available. See page 49.

Commission on Accreditation of Allied Health Education Programs 1361 Park St., Clearwater, FL 33756, (727) 210-2350

Medical Coding and Billing for the Health Care Professional, Certificate of Competency (MCH)

The Certificate of Competency in Medical Coding and Billing for the Health Care professional is designed to meet the needs of current licensed or certified Health Care Professionals (nurses, respiratory therapists, medical assistants) or graduates of the Health Studies Associate in Applied Science Degree program who are interested in becoming Professional Medical Coders and Billers or expanding their current job responsibilities to include medical coding.

This program provides students with the skills necessary to function as Physician-Based Coders, Hospital Coders, or Medical Claims Reviewers. Today, there are many demands for coding specialists and accurately coded data from the medical record in all types of health care institutions. Coded data are used on claims for reimbursement, patient care management, and healthcare evaluation and research. The curriculum includes medical terminology, human anatomy, computer skills and CPT and ICD coding. The graduate may sit for the Certified Professional Coder (CPC) or Certified Professional Coder-Hospital (CPC-H) examinations offered by the American Academy of Professional Coders.

A Certificate of Competency in Medical Coding and Billing for the Health Care Professional (MCH) will be awarded upon completion of this curriculum with a 2.0 GPA and a "C" or better in all allied health (AH) courses.

Upon successful completion of this program, students should be able to:
- Demonstrate an understanding of the anatomical structure and physiological functioning of the human body and of medical terms descriptive of body systems.
- Describe the ethical and legal concepts of concern to reimbursement in health care.
- Apply appropriate coding systems as they pertain to the identification of diseases and procedures in medical practices and hospital settings.
- Evaluate coding procedures for achievement of optimal quality in seeking appropriate reimbursement.
- Demonstrate ability to interact successfully with all significant private and government medical reimbursement systems.

Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AHM 230 Introduction to ICD-9-CM Coding Principles</td>
<td>3</td>
</tr>
<tr>
<td>AHM 231 Introduction to CPT-4 Coding</td>
<td>3</td>
</tr>
<tr>
<td>AHM 240 Advanced ICD-9-CM Coding</td>
<td>3</td>
</tr>
<tr>
<td>AHM 232 Advanced CPT-4 Coding</td>
<td>3</td>
</tr>
<tr>
<td>AHM 241 Medical Billing</td>
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</tr>
</tbody>
</table>

15 Credits

Total Credits Required: 15
Medical Coding and Billing, Certificate of Proficiency (MC)

The Medical Coding and Billing Certificate program provides students with the skills necessary to function as Physician-Based Coders, Hospital Coders, or Medical Claims Reviewers. Today, there are many demands for coding specialists and accurately coded data from the medical record in all types of health care institutions. Coded data are used on claims for reimbursement, patient care management, and healthcare evaluation and research. The curriculum includes medical terminology, human anatomy, computer skills and CPT and ICD coding. The graduate may sit for the Certified Professional Coder (CPC) or Certified Professional Coder-Hospital (CPC-H) examinations offered by the American Academy of Professional Coders.

A Certificate of Proficiency in Medical Coding and Billing will be awarded upon completion of this curriculum with a 2.0 GPA and a "C" or better in all allied health (AH) courses.

Upon successful completion of this program, students should be able to:

• Demonstrate an understanding of the anatomical structure and physiological functioning of the human body and of medical terms descriptive of body systems.
• Describe the ethical and legal concepts of concern to reimbursement in health care.
• Apply appropriate coding systems as they pertain to the identification of diseases and procedures in medical practices and hospital settings.
• Evaluate coding procedures for achievement of optimal quality in seeking appropriate reimbursement.
• Demonstrate ability to interact successfully with all significant private and government medical reimbursement systems.

First Semester

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ENG 100</td>
<td>English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>AHM 233</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>AHM 104</td>
<td>Body Structure/Function I</td>
<td>3</td>
</tr>
<tr>
<td>AHM 105</td>
<td>Body Structure/Function II</td>
<td>3</td>
</tr>
<tr>
<td>DPR 100</td>
<td>Introduction to Information Technology</td>
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<td><strong>Total Credits Required:</strong></td>
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Second Semester

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AHM 230</td>
<td>Introduction to ICD-9-CM Coding Principles</td>
<td>3</td>
</tr>
<tr>
<td>AHM 231</td>
<td>Introduction to CPT-4 Coding</td>
<td>3</td>
</tr>
<tr>
<td>AHM 108</td>
<td>Conditions of Illness</td>
<td>3</td>
</tr>
<tr>
<td>AHM 240</td>
<td>Advanced ICD-9-CM Coding</td>
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</tr>
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<td><strong>Total Credits Required:</strong></td>
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</tr>
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</table>

Third Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHM 232</td>
<td>Advanced CPT-4 Coding</td>
<td>3</td>
</tr>
<tr>
<td>AHM 241</td>
<td>Medical Billing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits Required:</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

Total Credits Required: 33

An Associate of Applied Science will be awarded upon completion of the Health Studies curriculum with a 2.0 GPA and a grade of "C" or better in all Allied Health (AH) courses.

Municipal Police Academy, Certificate of Competency (MPT)

All students successfully completing this certificate will earn thirty-six (36) credits, an ACT 120 certificate and be eligible to begin work as a Municipal Police Officer.

Upon successful completion of this program, students should be able to:

• Apply principles of police discretionary conduct.
• Describe the role of personal and professional conduct.
• Depict police leadership traits and techniques.
• Analyze psychological barriers to confrontation by police of their own emotional and psychological problems.
• Analyze the U.S. and Pennsylvania Constitution provisions that provide the legal basis for the exercise of police power.
• Recognize provisions of Pennsylvania statutes that define criminal conduct.
• Cite provisions of the Mental Health Act, Protection from Abuse Act, Liquor Control Act and Crime Victims Compensation Act.
• Identify the basic tenets of the Controlled Substance Act pertinent to their enforcement capacity.
• Apply appropriate provisions of the Motor Vehicle Code to specific factual situations.
• Define reportable and non-reportable, traffic and non-traffic motor vehicle collisions.
• Apply standard accepted principles of police patrol.
• Delineate Miranda-warning requirements.
• Define a preliminary investigation.
• Apply principles of preliminary, crime site and follow-up investigation.
• Apply principles of interview and interrogation.
• Differentiate criminal investigation from civil investigation.
• Identify the impact of role awareness, reference groups and motivation of human behavior.
• Describe legal and ethical concepts of concern to reimbursement in healthcare.
• Demonstrate procedures required for arrest and the methodology of handling a suspect.
• Illustrate unique problems involved in the detention of mentally ill, emotionally unstable and physically handicapped individuals.
• Illustrate proper procedures for use of pistols, shotguns and holsters.
• Operate police vehicles under normal and emergency circumstances.
• Describe the officer’s responsibilities for civil and/or criminal penalty in case of police vehicle accident.
• Illustrate written reports and note-taking skills.
• Identify proper procedure to handcuff suspects or prisoners.
• Identify the impact of role awareness, reference groups and motivation of human behavior.
• Depict police leadership traits and techniques.
• Describe various violent and dangerous situations, more particularly those involving domestic disputes, mentally ill individuals and violent criminals.
• Demonstrate written reports and note-taking skills.
• Apply principles of emergency medical care to crisis situations.
• List emergency medical problems confronted by police officers.
• Identify proper procedure to handcuff suspects or prisoners.
Paralegal Studies, Certificate of Proficiency (CPLG)

This program is approved by the American Bar Association (ABA). The certificate in Paralegal Studies is intended to educate a generalist paralegal. Graduates are likely to find employment working under the direction of an attorney (to do otherwise would be practicing law without a license) in law firms, legal departments of large corporations, insurance companies, title companies, legal service companies, and/or federal, state or local governmental agencies. In short, wherever lawyers are employed, paralegals are likely to be employed as well.

The certificate of proficiency program in Paralegal Studies may be completed only by an individual who holds an associate or bachelor’s degree with at least 21 learned credits in approved General Education courses.

Upon successful completion of this program, students should be able to:
- Conduct legal research to identify the appropriate laws, judicial decisions, regulations and other legal literature applicable to specific legal problems.
- Research and draft memoranda as directed by an attorney.
- Research and draft pleadings and other legal documents as directed by an attorney.
- Investigate and develop the facts of a case under the direction of an attorney.
- Assist an attorney to prepare a case for trial and assist during trial.
- Maintain all relevant case documents.
- Maintain files of a case including but not limited to correspondence, pleadings, reports and briefs.
- Draft basic documents applicable to contracts, real estate transactions, domestic relations, and estates, trust and wills as well as other appropriate legal documents.
- Apply modern technology to the performance of legal work and tasks.
- Discuss the ethical issues that arise for the Paralegal Professional.

See Electives Listings, Page 74.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLG 100</td>
<td>Introduction to Paralegalism</td>
</tr>
<tr>
<td>PLG 110</td>
<td>Legal Research and Writing I</td>
</tr>
<tr>
<td>PLG 120</td>
<td>Legal Research and Writing II</td>
</tr>
<tr>
<td>PLG 140</td>
<td>Contract Law</td>
</tr>
<tr>
<td>PLG 199</td>
<td>Co-op Internship or Paralegal Electives</td>
</tr>
<tr>
<td>PLG 200</td>
<td>Family Law</td>
</tr>
<tr>
<td>PLG 210</td>
<td>Civil Litigation and Tort Principles</td>
</tr>
<tr>
<td>PLG 211</td>
<td>Civil Litigation and Tort Applications</td>
</tr>
<tr>
<td>PLG 220</td>
<td>Real Estate Law</td>
</tr>
<tr>
<td>PLG 230</td>
<td>Estates, Wills and Trusts</td>
</tr>
</tbody>
</table>

Total Credits Required: 15

Photography, Certificate of Competency (PHOT)

This Certificate of Competency is designed to give students the knowledge to handle the science, craft and artistic merit of photography. The courses offered in this program provide a platform to bridge the technological gap between traditional and rapidly changing digital methods. Students will be exposed to a variety of tools and techniques that employ the use of photographic films, paper, chemicals, and computer applications in photography.

Upon successful completion of this program, students should be able to:
- Calculate, process and print exposures correctly.
- Pre-visualize subject matter for black and white photographs and determine film speed.
- Prepare and use toners safely.
- Apply large format camera work to studio subject matter by arranging and lighting objects to render perspective and depth of field correctly.
- Integrate knowledge of conventional analog into digital photography techniques.
- Produce a portfolio of black and white or color photographs, which will incorporate analog and digital techniques.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 160</td>
<td>Black and White Photography I</td>
</tr>
<tr>
<td>ART 161</td>
<td>Black and White Photography II</td>
</tr>
<tr>
<td>ART 162</td>
<td>Black and White Photography III</td>
</tr>
<tr>
<td>ART 169</td>
<td>Medium and Large Format Photography</td>
</tr>
<tr>
<td>ART 166</td>
<td>Black and White Digital Negative (or)</td>
</tr>
<tr>
<td>ART 175</td>
<td>Color Digital Printing</td>
</tr>
</tbody>
</table>

Total Credits Required: 15

Perioperative Nursing, Certificate of Competency (NURP)

This program is designed to assist professional nurses to expand their knowledge, increase their sensitivity to human needs and become accountable to consumers in the nursing practice area of the operating room. Recognizing the perioperative nurse’s ongoing commitment to the surgical patient, the program offers courses that prepare neophytes for perioperative nursing practice as well as offering education to the experienced perioperative nurse who wishes to practice in the expanded role of the RN First Assistant.

Certain manual dexterity and sensory skills that enable the student to competently perform required technical skills are necessary for successful completion of the Perioperative Nursing program. Health problems that can interfere with the applicant’s ability to demonstrate achievement of program competencies are considered individually.

Because perioperative nurses act as advocates for consumers, course work is offered that develops nursing capability in the management of people and resources. The program prepares nurses in providing continuous, integrated care in preoperative assessment, intraoperative intervention, and postoperative evaluation as either a perioperative staff nurse or RN First Assistant.

Upon successful completion of this program, students should be able to:
- Analyze established standards and recommended practices for perioperative nursing.
- Identify processes for measuring the quality of patient care.
- Assume responsibility for care given to surgical patients.
- Apply the nursing diagnosis as the prescriptive principle that guides perioperative nursing activity.
- Use the nursing process as the model for continuous and systematic data collection for the patient undergoing surgical intervention.
- Value the surgical patient as the center of the broad scope of activities, which encompass the professional practice of perioperative nursing.

See Electives Listing, Page 74. (Any AHA Course).
**Plumbing Apprenticeship, Certificate of Competency (PLB)**

The Plumbing Apprenticeship program is a four-year curriculum that provides essential skills needed in today’s plumbing occupations. The coursework covers a diverse range of skills and knowledge and helps develop maturity and independence of judgment. This apprenticeship training provides practical and theoretical aspects of the work required in this highly skilled occupation. This program is designed to be completed on a part-time basis only.

Upon successful completion of this program, students should be able to:

- Pass journey-level licensing examinations.
- Demonstrate proper safety practices.
- Lay out and install supply, drainage and heat piping systems.
- Specify and install various fixtures.
- Cite various requirements of the National Plumbing Code.
- Identify by sight supply and drainage materials and fittings.
- Read construction blueprints and specifications.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PLB 100</td>
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<tr>
<td>PLB 101</td>
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<tr>
<td>PLB 102</td>
<td>5</td>
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<tr>
<td>PLB 103</td>
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<td>PLB 200</td>
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<td>PLB 202</td>
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<td>PLB 207</td>
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<td>PLB 208</td>
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<tr>
<td>PLB 209</td>
<td>5</td>
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</tbody>
</table>

**Total Credits Required: 37**

**Process Technology I, Certificate of Competency (PCT)**

This certificate is designed to prepare students for entry-level positions as Process Operators within the various (continuous flow) Processing Industry fields. Continuous-flow Process Operators are employed in industries such as petroleum refining, petrochemicals, chemical, and pharmaceutical manufacturing, as well as food processing industries. The program provides students with an introduction to the concepts, theory, principles, and technical demands, as well as the hazards and accident prevention aspects associated with the operation of processing equipment.

Upon successful completion of this program, students should be able to:

- Describe, in general terms, the job responsibilities of various positions of employment within the (continuous flow) Processing Industry.
- Utilize a computer to retrieve/prepare/compile operator specific documentation.
- Discuss and apply safety, health, and environmental regulations in the context of an operator.
- Apply an understanding of chemistry (at an operator performance requirement level).
- Cite the operational characteristics of various pieces of processing equipment.
- Interpret processing schedules, operating logs, and test results to determine operating parameters for assigned equipment.
- Analyze specifications, monitor, and adjust controls to meet production requirements.
- Determine equipment malfunction/change-out requirements.
- Align (bring on line), observe/inspect, and set proper operating conditions for assigned production unit equipment.
- Perform operator assigned maintenance activities.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PCT 101</td>
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<td>TCC 111</td>
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<td>MAT 110</td>
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<td>CHE 105</td>
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</table>

**Total Credits Required: 20**

**Process Technology II, Certificate of Proficiency (PCTP)**

This certificate is designed to provide students with the necessary skills and knowledge to seek entry-level positions of employment as Process Operators/Technicians within the various Processing Industry fields. Process Operators/Technicians are employed in industries such as petroleum processing, petrochemicals, chemical, and pharmaceutical manufacturing, as well as food processing industries. Continuous-flow production industries include; petroleum refining, petrochemicals, as well as chemical manufacturing, and commercial distribution. Other related processing/manufacturing industries, such as pharmaceutical and food production industries, are also considered as continuous-flow industries.

The program is designed to provide the student with appropriate skills and knowledge required to assure proper operational aspects of processing units which are designed to refine, formulate, blend, mix, treat, transfer, and/or hold liquid, gaseous, and solid products.

Upon successful completion of this program, students should be able to:

- Classify various production units within a processing plant, and describe their operating parameters.
- Discuss the principles of operation for major pieces of equipment designed to support various units within a plant/facility.
- Determine the process flow, processing systems, auxiliary, and utility systems for a particular production process.
- Interpret the operation of a process control system, given appropriate supporting documentation.
- Cite the relevant applications of environmental, safety, and health, and accident prevention rules, regulations, policies and procedures required for appropriate equipment, as well as unit/plant operation.
- Perform general maintenance, operating and monitoring duties associated with the commissioning, normal start-up/shutdown, operation, turn-around, and replacement of equipment and various plant units.
- Assist in determining and conducting (abnormal) Emergency Shut Down (ESD) incident response and abatement procedures.
- Develop and use documentation, such as Process Flow Diagrams (PFDs) and Piping and Instrumentation Diagrams (P&IDs) as tools for checklist development and troubleshooting.
- Demonstrate effective communication skills in order to develop, request, convey, and issue instructions in a clear, concise, and accurate manner.
- Utilize customer-client relationships, data-collection and analysis, and other quality improvement techniques to enhance personal job performance.
- Incorporate mathematical and scientific reasoning when solving problems.

Students pursuing this certificate program must meet the following prerequisites:

- Introduction to Process Technology (PCT 101), Plant Equipment (PCT 100), Safety, Health and the Environment
- PCT 110, Introduction to Computers (DPR 100), Technical Mathematics I (MAT 110) and Introduction to Chemistry (CHE 106).
Radiation Therapy, Certificate of Proficiency (RAD)

The Radiation Therapy certificate is designed to provide a curriculum where students, committed to the value of caring, can develop competencies essential for safe, effective radiation therapy practice in a variety of health care settings within the community. Radiation Therapy is a sub-specialty of Radiologic Technology.

In Radiologic Technology, patients receive diagnostic tests from Radiologic Technologists such as X-rays, Computed Tomography (CT), Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET) scans that aid physicians in the diagnosis of an ailment. Radiation Therapy is a therapeutic modality. Patients come to radiation therapy facilities with a diagnosis of cancer, and Radiation therapists are the trained professionals that deliver their radiation treatment(s). The Radiation Therapy curriculum prepares students for positions as entry-level radiation therapy practitioners in a variety of settings; i.e. academic, free standing centers, and community-based hospitals. Upon successful completion of this curriculum, students receive a certificate of proficiency and are eligible to sit for the American Registry of Radiologic Technologists (ARRT) certification exam.

Selected clinical learning experiences, under the direct guidance of a clinical supervisor, are provided primarily at Crozer Keystone Health facilities. The purpose of these experiences is to provide the student with the opportunity to apply classroom learning in direct patient-care situations. Upon successful completion of this certificate, students should be able to sit for the American Registry of Radiologic Technologists (ARRT) certification exam.

Upon successful completion of this certificate, students should be able to:

- Meet all the requirements for a Certificate of Proficiency in Radiation Therapy from Delaware County Community College.

Small Business Management Certificate of Proficiency (CSBM)

The Small Business Management program is designed to prepare students in both operational and skill aspects of the small enterprise. Such preparation will equip students with specific areas of skills or management to either enter an existing small firm or begin their own entrepreneurial enterprise.

Courses are designed so that the student, through logical steps, understands the principles unique to small business operation. Successful completion of 32 credits may lead to a certificate of proficiency in small business. Practical knowledge in small business management, finance, marketing, sales, advertising, and supervision are designed to prepare students for entry-level needs. Generally, transfer is not intended through this program. The associate degree, business/computer information systems, should be considered when considering use of credits for transfer.

College-Sponsored Experiential Learning may be taken for credit while working in a small business with specific managerial duties.

Upon successful completion of this program, students should be able to:

- Use terms and tactics within the small business environment.
- Be able to develop a marketing plan.
- Analyze and resolve problems involving financial statement comparisons.
- Create advertising promotions appropriate to the small business.
- Demonstrate the skills necessary to operate office equipment commonly used in the small company.
- Show proficiency in microcomputer applications within the management and operating needs of the small business environment.
- Understand personal qualities needed to function effectively with individuals in supervision, evaluation and control.
- Develop effective communication to administer policy both internally and externally.

See Electives Listing, Page 74.
## Second Semester Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL12 English Composition II</td>
<td>3</td>
</tr>
<tr>
<td>BUS233 Financial Planning</td>
<td>3</td>
</tr>
<tr>
<td>BUS231 Principles of Advertising</td>
<td>3</td>
</tr>
<tr>
<td>BUS211 Supervision</td>
<td>3</td>
</tr>
<tr>
<td>__________ Business Elective or Co-op/Internship</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits Required: 15

An Associate in Applied Science degree is also available. See page 54.

### The Child Development Associate, Certificate of Competency (ECA)

This Certificate of Competency from Delaware County Community College will prepare students for entry level positions in early care and education programs. It will enable students to apply for The Child Development Associate Credential (CDA) which is awarded by The Council for Professional Recognition. This program is composed of three 3 credit courses and one 1 credit course that meets the educational requirement and competencies for the CDA.

Upon successful completion of this program, students should be able to:
- Develop strategies for fostering children's cognitive, physical, social, emotional and language development.
- Demonstrate knowledge and understanding of the importance of working with parents as partners.
- Select and apply age and developmentally appropriate materials, equipment and activities for curricula designed to meet the needs of typical, and atypical young child.
- Manifest a responsible and professional attitude toward career goals.
- Describe the structure and practices of early childhood education.

### Course Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE100 Principles of Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>ECE110 Methods and Materials for Teaching I</td>
<td>3</td>
</tr>
<tr>
<td>ECE111 Methods and Materials for Teaching II</td>
<td>3</td>
</tr>
<tr>
<td>ECE112 Developing a Professional Portfolio</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits Required: 10

### The Early Childhood Director, Certificate of Competency (ECD)

The Early Childhood Director Certificate of Competency from Delaware County Community College will prepare students for administrative and leadership positions in early care and education programs. Coursework will cover strategies for program administration, understanding of financial management and current issues facing early care and education programs. This certificate of competency also meets the educational requirements for Pennsylvania's Director Credential that is awarded by the Pennsylvania Early Learning Keys to Quality. Students seeking this certificate must have an AAS or AS in ECE or related field or higher OR have completed 45 hours towards an AAS degree in Early Childhood Education.

Upon successful completion of this program, the student should be able to:
- Develop leadership skills to enhance the student's ability to effectively manage an early childhood program.
- Utilize governmental regulations and best practice guidelines to improve the quality of early care and education services.
- Evaluate current administrative strategies and develop more effective management skills.
- Identify and implement sound and proven business and financial management strategies.
- Identify current trends in early care and education and develop strategies for effectively implementing program policy to address these trends.
- Evaluate current practices in supervision of teaching staff and develop strategies to enhance the staff's skill in providing high quality early care and education.

### Course Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE290 Administration and Supervision of Early Care and Education Environments</td>
<td>3</td>
</tr>
<tr>
<td>ECE291 Current Issues and Trends in Early Care and Education</td>
<td>3</td>
</tr>
<tr>
<td>ECE293 Financial Strategies for the Business of Early Care &amp; Education Programs</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits Required: 9

### Theatre Arts, Certificate of Competency (THEC)

The Certificate of Competency in Theatre Arts is designed for students who wish to have sufficient theatre training to be able to pursue a career in the theatre, or who wish to apply for certain graduate level theatre training programs which accept students without a B.A. All Theatre Arts courses are transferable for those students who wish to pursue a B.A. in Theatre or Communication Arts. In the Theatre Arts Certificate of Competency program, students are given a strong background in a broad range of theatre skills, including acting, set construction and design, lighting design, costume and make-up design, and theatre history. Students may then choose from elective courses in Theatre Arts to complete the requirements for the Certificate of Competency.

Upon completion of the Theatre Arts Certificate program, students should be able to:
- Demonstrate knowledge of the global history of Theatre, its major genres and trends, and most influential practitioners.
- Analyze and critique plays and scripts.
- Demonstrate a working knowledge of the basic theories and techniques of acting.
- Demonstrate a working knowledge of set, lighting, costume, and make-up design.
- Demonstrate a working knowledge of tool usage and safety.
- Demonstrate an ability to work collaboratively within a group of diverse talents and skills to bring a play or script to performance.

### Course Credits

<table>
<thead>
<tr>
<th>Course #</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRA100</td>
<td>Introduction to Theatre</td>
</tr>
<tr>
<td>DRA110</td>
<td>Acting I</td>
</tr>
<tr>
<td>DRA111</td>
<td>Acting II</td>
</tr>
<tr>
<td>DRA116</td>
<td>Stagecraft</td>
</tr>
<tr>
<td>DRA114</td>
<td>Theatre Arts Practicum</td>
</tr>
</tbody>
</table>

Choose One of the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRA105</td>
<td>Acting Shakespeare</td>
</tr>
<tr>
<td>DRA130</td>
<td>Voice and Movement</td>
</tr>
<tr>
<td>ENGL207</td>
<td>Creative Writing: Introduction to Playwriting</td>
</tr>
</tbody>
</table>

Total: 16 credits
Web Development, Certificate of Competency (WEB)

This certificate option will provide students with a multi-disciplinary approach and expose students to the design, networking, and programming areas of the field. Designed to prepare students for entry-level employment as: Web Site Designer, Web Developer, Web Programmer. Students learn to integrate client-side and server-side technologies to build and manage real-world web-based applications. The program provides students with necessary skills for creating and managing websites using the most current technologies including: HTML/XHTML, CSS, UNIX, web scripting technologies (PHP, Perl/CGI), and web application database technologies. Students also gain a foundation in networking technologies including the OSI model, network protocols, transmission media, topologies, hardware, software, WANs, remote connectivity, security, and TCP/IP.

Upon successful completion of this program, students should be able to:
• Create and format web documents using current HTML/XHTML standards
• Create integrated web database applications
• Manage, update and maintain web sites
• Install, use, manage and customize the UNIX operating system
• Create and use web scripting technologies to process and analyze web data
• Understand and apply the fundamentals of networking including the OSI model, network protocols, transmission media, topologies, hardware, software, WANs, remote connectivity, security, and TCP/IP.
• Design and deliver cross-platform, low-bandwidth animations, presentations, and Web applications using Macromedia Flash

Welding, Certificate of Competency (WLD)

The welding program offers practical training and relevant theory in electric, oxy-acetylene welding, inert gas shielded metal arc welding, flux-core arc welding, shielded metal arc welding, non-destructive testing and quality assurance, and CNC plasma cutting.

Upon successful completion of this program, students should be able to:
• Demonstrate basic competencies in the four primary welding processes used in industry today.
• Use welding electrodes E6010, E6011, E7018 in four positions.
• Interpret blueprints and welding symbols.
• Demonstrate non-destructive testing and basic metallurgy required in industry.

Core Curriculum

Course Credits
DPR 108 Introduction to Computer Science 3
IMM 120 Web Page Development 3
NET 110 Network Technologies 3
DPR 206 Programming for the Web 3
DPR 209 PERL/CGI Programming 3
DPR 141 UNIX Operating System 3
IMM 205 Flash 3
IMM 199 Optional Co-op/Internship 3

Total Credits Required: 21

Electives:
WLD 150 Welding Design 2
WLD 151 Testing and Inspection of Welds 2
WLD 152 Welding Codes and Specifications 2
WLD 153 Soldering, Brazing and Brace Welding 2

Total Hours Required: 28
1. Business Electives
   A. For college transfer curricula: ACC 111, ACC 112, ACC 210, BUS 100, BUS 101, BUS 111, BUS 130, BUS 149, BUS 210, BUS 211, BUS 212, BUS 214, BUS 215, BUS 220, BUS 230, BUS 231, BUS 232, BUS 236, BUS 241, BUS 243.
   Under special circumstances other courses in ACC, BUS, DPR, HRM, and PLG may be permitted as electives when recommended by the advisor and approved by the dean.
   B. For career programs: courses listed as ACC, BUS, DPR, HRM.

2. Computer Electives
   A. For college transfer curricula: DPR 100, DPR 105, DPR 108, DPR 113, DPR 205, DPR 222, DPR 226
   B. For career programs: courses listed as DPR, IMM, and NET

3. Humanities Electives
   A. For college transfer curricula: courses listed under ART, DRA, ENG 113 or above, FRE, GER, HUM, ITA, MUS, PHI, SPA and all COMM courses listed 100 or above.
   B. For career programs: courses listed under ART, DRA, ENG 113 or above, FRE, GER, HUM, ITA, MUS, PHI, SPA and all COMM courses listed 100 or above.

4. Social Science Electives
   A. For college transfer curricula: ADJ 240, ADJ 260, ECO 210, ECO 220, EDU 200 or above, HIS 100 or above, POL 110 or above, PSY 140 or above, SOC 110 or above.
   B. For career programs: all ADJ, ECE, ECO, EDU, HIS, POL, PSY, SOC courses.

5. Science Electives
   A. For the Natural Science Curriculum (as laboratory sciences): BIO 110, BIO 111, BIO 115, BIO 200, BIO 210, BIO 230 (not Bio 117, 118 or 220), CHE 110 or above, ESS 110 or above, PHY 110 or above.
   B. For the Science for Health Professions Curriculum (as laboratory sciences): BIO 100 or above, CHE 106 or above, PHY 105, or above, SCI 100.
   C. For college transfer curricula: BIO 100 or above, CHE 106 or above, ESS 100 and above, PHY 105 and above, SCI 100 and 110.
   D. For career programs: MAT 100 or above.

6. Mathematics Electives
   A. For the Natural Science Curriculum: MAT 140 or above
   B. For the Science for Health Professions Curriculum: MAT 140 or above
   C. For college transfer curricula: MAT 120 or above
   D. For career programs: any MAT course 100 or above

7. Course 270
   Courses numbered 270 through 279 designate credits that are transferred into DCCC as electives in that discipline. These courses do not directly equate to a specific DCCC course but meet requirements to be transferred in by the College.

5/15/08
Course Numbering System

A departmental abbreviation precedes the course number; e.g., ENG 100, English Composition I. Only courses numbered 100 or above are applicable toward a degree.

Number of credits and meeting hours for each course are listed after each course description.

Any prerequisites: listed must be completed before registering for a course. Co-requisites listed may be taken at the same time as the indicated course. Prerequisites: for humanities electives may be waived with permission of the instructor.

Not all courses are offered each semester. A schedule of course offerings is published for each semester.

Special Studies courses are offered by specific academic areas. Topics will be announced for specific course requirements along with lecture and laboratory hours, credits and a brief course description.

(ACC) Accounting

ACC 100 Applied Accounting
This course provides students with an understanding of the accounting cycle for service and merchandising firms. In addition, students reconcile bank accounts and maintain a manual payroll system. This course is intended for students in most career business curricula. This course is generally not transferable.

Upon successful completion of this course, students should be able to:
- Record representative journal entries, post them to the general ledger, foot and balance the accounts, prepare a trial balance and complete a work sheet, financial statements and the remainder of the accounting cycle for a single proprietorship.
- Record representative business transactions for a merchandising business utilizing the appropriate special journals.
- Prepare all documents necessary for the maintenance of a checking account and prepare a bank reconciliation.
- Maintain and reconcile accounts receivable and accounts payable ledgers with appropriate control accounts.
- Compute and record adjustments for plant assets, prepaid expenses, merchandise inventory and accrued expenses.
- Maintain a payroll system.

Prereq. ENG 050, REA 050, MAT 040
3 Credits 3 Weekly Lecture Hours

ACC 111 Financial Accounting
This course provides students with a comprehensive treatment of the complete accounting cycle for both service and merchandising businesses in accordance with Generally Accepted Accounting Principles (GAAP). The course also focuses on accounting systems, concepts, issues and the preparation and analysis of financial statements.

Upon successful completion of this course, students should be able to:
- Perform all the steps of the accounting cycle in accordance with GAAP for service and merchandising businesses.
- Prepare financial statements for sole proprietorships, partnerships and corporations.
- Calculate quantities and dollar amounts of merchandise inventory and cost of goods sold using GAAP and IRS methodologies.
- Provide for uncollectible accounts receivable and calculate the estimated amount of accounts receivable that will ultimately be collected.
- Calculate depreciation, depletion and amortization, and calculate the book value of plant and intangible assets.
- Broadly describe the principles of internal control over assets and the accounting profession's Code of Ethics.
- Discuss the income tax consequences resulting from the use of alternate GAAP methodologies.
- Describe the differences among cash, accrual and other comprehensive bases of accounting.
- Make calculations and prepare journal entries for various end-of-period adjustments.
- Make calculations and prepare journal entries for the issuance and redemption of debt and equity securities by corporations.

Prereq. ENG 050, REA 050, MAT 040
3 Credits 3 Weekly Lecture Hours

ACC 115 Computerized Accounting
This course provides students with an understanding of computer applications of the accounting cycle using an accounting computer software program. In addition, students will utilize a spreadsheet program to perform a bank reconciliation, inventory costing, depreciation methods and payroll.

Upon successful completion of this course, students should be able to:
- Develop on a computer a chart of accounts, record representative journal entries, and prepare a trial balance and financial statements for a service proprietorship.
- Record on a computer representative business transactions for a merchandising business utilizing the appropriate special journals.
- Complete a worksheet and a multiple step income statement for a merchandising business on a computer.
- Maintain and reconcile accounts receivable and accounts payable ledgers on a computer with appropriate control accounts.
- Prepare all documents necessary for the maintenance of a checking account and prepare a bank reconciliation.
- Maintain a payroll system.
- Compute depreciation expense and merchandise inventory values on a computer using various methods.
- Compute basic analytic measures and ratios.

Prereq. ACC 100 or ACC 111 and DPR 100
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ACC 201 Introduction to Cost Accounting
This course focuses on the use of accounting in the development of the managerial functions of planning, controlling and decision-making. Special emphasis is given to the various processes which assist managers obtain optimum results. Students learn what kind of accounting information is needed by managers, where the information can be obtained, how to analyze the information and how to provide clear, concise and meaningful information to managers.

Upon successful completion of this course, students should be able to:
- Describe the various environments in which managerial accounting functions.
- Describe situations where managerial and financial methodologies need to be different.
- Prepare a statement of Cash Flows.
- Analyze financial statements using comparative, trend and ratio analysis.
- Discuss the advantages and disadvantages of different approaches to allocations.
- Develop operating and capital budgets.
- Prepare performance evaluation reports to compare actual results to budgets illustrate and describe the concepts and accounting recording requirements of process and job order cost accounting systems.
- Prepare reports and analysis utilizing systems and techniques which enable management to perform their functions of planning, controlling and decision making.

Prereq. ACC 111
3 Credits 3 Weekly Lecture Hours

ACC 202 Introduction to Tax Accounting
The primary objective of this course is to gain a practical understanding of the personal income tax, various payroll taxes and the Pennsylvania sales tax. Students will demonstrate an understanding of these taxes by making appropriate calculations and preparing current tax forms. This is a required course for students enrolled in other career programs. Credit for this course will not be given to students who attain credit for Federal Income Tax Accounting (ACC 210).

Upon successful completion of this course, students should be able to:
- Discuss the history and objectives of the U.S. tax system.
- Determine who must file a tax return, filing status, personal and dependent exemptions and the standard deduction.
- Identify items to be included in and excluded from gross income.
- Calculate capital gains and losses.
- Complete tax returns for the self-employed.
• Compute deductions for adjusted gross income.
• Identify and calculate itemized deductions.
• Compute the income tax liability using tax tables and tax rate schedules. Identify and calculate various tax credits and prepayments.
• Complete tax forms for the employer’s reporting of FICA, State and Federal Unemployment Compensation tax, and Pennsylvania sales tax.

ACC 210 Federal Income Tax Accounting
The objectives of this course are to explore the role of the personal income tax in the U.S. economy and to gain familiarity with income tax fundamentals. The course is intended as a business elective for students in the Business Administration curriculum and as a general elective for students enrolled in other transfer programs. Credit for this course will not be given to students who attain credit for Introduction To Tax Accounting (ACC 202).

Upon successful completion of this course, students should be able to:
• Discuss the revenue, social and economic objectives of the U.S. income tax.
• Discuss the history of the income tax in the United States.
• Describe how tax changes become law, recent tax reforms and the tax-planning process.
• Gain familiarity with income tax fundamentals income concepts, exclusions, deductions, tax rates and credits.
• Calculate capital gains and losses and discuss their treatment.
• Calculate the deductions for medical expense, casualty losses, taxes, contributions, interest and expense of earning a living.
• Identify tax policies intended to contribute to full employment and national defense.
• Calculate depreciation and investment credit.
• Discuss common recognition postponement techniques.

Prereq. ACC 111
3 Credits 3 Weekly Lecture Hours

ACC 251 Intermediate Accounting I
This course is a comprehensive study of contemporary accounting theory, concepts, and procedures and their application to financial reporting. Intermediate problems pertaining to cash, receivables, inventories, plant and equipment, and investments in securities are presented. Understanding of the concepts covered in this course is crucial to successfully completion of all subsequent financial accounting and courses in the accounting sequence.

Upon successful completion of this course, students should be able to:
• Discuss the need for a conceptual framework for accounting.
• Explain the importance of recognizing, measuring and reporting income and the content, purposes and limitations of a balance sheet.
• Define cash and identify those items that are properly classified as cash.
• Describe and apply generally accepted accounting principles for temporary and long-term investments.
• Discuss issues involved in valuation and reporting of accounts and notes receivable.
• Describe and explain the nature of inventories, the accounting for inventories, and effect of inventory accounting alternatives on the financial statements.
• Distinguish between tangible and intangible assets, and understand the types of problems and related solutions involved in recording the acquisition, utilization and retirement of real property, equipment and intangible assets.

Prereq. ACC 112
3 Credits 3 Weekly Lecture Hours

ACC 252 Intermediate Accounting II
This course is a continuation of Intermediate Accounting I. Intermediate problems pertaining to current and long-term liabilities, stockholders’ equity, pensions, financial statement analysis, price-level accounting, and cash flow reporting are presented. Understanding of the concepts covered in this course is crucial to successful completion of all subsequent financial accounting and auditing courses in the accounting sequence.

Upon successful completion of this course, students should be able to:
• Define, classify and measure all types of liabilities.
• Explain various types of long-term debt securities and the procedures involved in accounting for bonds and long-term notes.
• Apply appropriate accounting procedures to the issuance of capital stock under a variety of different situations.
• Identify and explain the accounting significance of transactions and events that cause the balance in the retained earnings account to change.
• Calculate primary and fully diluted earnings per share under a variety of different circumstances.
• Discuss the economic, accounting and practical issues involved in revenue recognition.
• Explain and apply appropriate accounting procedures for intraperiod and interperiod income tax allocation.
• Apply appropriate procedures to account for operating leases and capital leases by the lessor and lessee.
• Identify and describe the objectives and limitations of the cash flows statement.
• Discuss the objectives and the methods of financial statement analysis.

Prereq. ACC 251
3 Credits 3 Weekly Lecture Hours
ADJ 111  Criminal Procedure
This course gives the justice student an opportunity to explore the living law of the U.S. Constitution, and Federal and Commonwealth of Pennsylvania statutory law and their impact on the process of administration of justice. The course examines the powers and limitations of power as defined in the first seven Articles; the concept of federalism and the powers reserved to the states; and a detailed examination of the Bill of Rights guarantees and their applicability to federal and state rules of criminal procedure through the due process clause of the U.S. Constitution.
Upon successful completion of this course, students should be able to:
• Identify and explain the rights of the citizen in a legal proceeding.
• Provide an overview of the justice process and identify the Constitutional guarantees applicable at each step.
• Understand the laws of search and seizure, arrest, interrogation and Identification Procedures.
• Explain the impact of the Exclusionary Rule of Evidence and its impact on the criminal investigation.
• Apply the Constitutional guarantees and limitations of the 4th, 5th, 6th, 8th and 14th Amendments to the adjudicatory process.
Prereq. SOC 110 or SOC 111
3 Credits 3 Weekly Lecture Hours

ADJ 201  Organization and Management of Justice Agencies
This course surveys the organizational framework of justice agencies that include police agencies at each level of government and with diverse missions; courts of original and appellate jurisdiction; federal and state prisons and the county jail. It covers proper administrative techniques including policy development, public relations, budgeting, communications and operation procedures.
Upon successful completion of this course, students should be able to:
• Identify and explain the nine major organizational principles and practices that control operations of justice agencies.
• Explain how a system design reflects the actual plan of action for the entire organization.
• Elaborate the process of communications as an administrative tool.
• Analyze the administrative aspects of personnel regarding task analysis, promotional procedures, selection and evaluation techniques and policy guidelines for management.
• Evaluate the concept of management by objectives.
3 Credits 3 Weekly Lecture Hours

ADJ 202  Terrorism: History, Threat and Response
Introduces the historical and contemporary issues relevant to domestic and international terrorism. Examines methods utilized by law enforcement and intelligence agencies in preventing and detecting terrorism. The constitutional and sociological dilemmas involved in investigating terrorist acts and the threat to the right of privacy and suspension of individual rights will be explored.
Upon successful completion of this course, students should be able to:
• Define terrorism both in terms of violence and propaganda.
• Review the historical perspectives and complexities of terrorist causes and doctrines.
• Evaluate media coverage in terrorist crisis situations.
• Cite the major international and domestic terrorist organizations in the U.S.
• Cite the major reasons why the U.S. has become a target of terrorism.
• Delinate the philosophies of the leading international and transnational terrorist organizations.
• Explain hostage-taking strategies and the tactics utilized by democratic governments in response to terrorism.
Prereq. ENG 050 and REA 050 or pass test
3 Credits 3 Weekly Lecture Hours

ADJ 120  Principles of Investigation
As an introduction to criminal investigations, this course is designed to serve students seeking careers in law enforcement, courts and corrections as well as private security. It includes professional conduct at the crime scene, interviews and interrogations of witnesses and suspects, the use of informants, the techniques of surveillance and presentation of the case in a court of law.
Upon successful completion of this course, students should be able to:
• Discuss the history and development of criminal investigation.
• Develop the concept of investigative leads based on information uncovered during the investigative process.
• Analyze the various procedures used in gathering and handling evidence at the crime scene.
• Discuss the impact of Supreme Court decisions on the ability to gather information in the investigative process and preparation of information for court testimony.
3 Credits 3 Weekly Lecture Hours

ADJ 130  The Elderly and the Criminal Justice System Special Studies
This course is designed to study the agencies, processes and people involved in the criminal justice system as it focuses on problems with the elderly. Legislatures, law enforcement, prosecution, courts, corrections issues are studied with respect to the elderly. Emphasis will be made on the challenges faced by the criminal justice system, when dealing with issues associated with senior citizens. Particular attention will be dedicated to different international approaches to these issues in the study of gerontology.
Upon successful completion of this course, students should be able to:
• Explain the problems faced by the police in dealing with the elderly as victims and as perpetrators.
• Recognize the various methods of fraud perpetrated against Medicare and Medicaid.
• Discuss the rising rate of elder abuse as it relates to the family, caretakers and nursing homes.
• Understand the impact of the Criminal Justice process on the Elderly as eyewitnesses and jurors.
• Delineate the problems of sentencing elderly convicted offenders.
• Outline the strategies used to handle elderly prisoners.
• Discuss various international approaches to the relationship of the Elderly to the various criminal justice systems.
Prereq. ENG 050 and REA 050 or pass test
3 Credits 3 Weekly Lecture Hours

ADJ 203  Contemporary Issues in Criminal Justice
This course provides the advanced Administration of Justice student a focus on the leading issues confronting the various elements of the justice system, to research and develop possible remedies to address these issues, and to assist the student in making intelligent career decisions.
Upon successful completion of this course, students should be able to:
• Defend a position on the decriminalization of victimless crimes.
• Evaluate the merit of the several states individually defining crime and punishment.
• Justify uniformity in the standards, policies and procedures of our state justice systems.
• Detail the advantages and disadvantages of plea negotiation (bargaining).
• Evaluate the creation of a public service office entirely separate from the police force to provide social and human services.
• Summarize the major issues involved in police prosecutor and court discretionary powers.
• Depict the supervisory and enforcement functions of the probation/parole office.
• Analyze the current treatment of the youthful offender and suggest more viable alternatives.
3 Credits 3 Weekly Lecture Hours

ADJ 205  Victimology Special Studies
This is a survey course covering contemporary development in the field of victimology, its conceptual boundaries, its basic concepts and literature. Its subfields and role as a field of study within criminology and criminal justice. The historical and emerging roles of victimology as a field of study are examined and discussed in depth. Special attention is paid to applied learning objectives with respect to each student's personal experiences with the human dimensions of victimization. This course also deals with analysis of contemporary programs and trends in the criminal justice system's response to victims.
Upon successful completion of the course, students should be able to:
• To increase familiarity with basic terms, concepts and ideas in victimology.
• To appreciate the historical development of victimology and its subfields.
• To explore and analyze contemporary problems and trends in victimology.
• To review the functions, operations & management of the criminal justice system.
• Describe the basic components of the Criminal Justice System which pertains to victim assistance.
• Identify the liabilities of individuals who perpetrate criminal acts upon victims.
• Recognize the requirements of various Pennsylvania criminal statutes in protecting victims’ rights.
• Identify the important role victims playing in vindicating their own rights through victim impact statements.
Prereq. ADJ 101 or PSY 110 or SOC 111
3 Credits 3 Weekly Lecture Hours

ADJ 215  Domestic Violence Special Studies
Experts define domestic violence as purposeful, violent behavior used to maintain power and control over an intimate partner. According to the Centers for Disease Control and Prevention, nearly one million incidents of non-lethal intimate partner violence (defined as violence between spouses or past/present intimate partners) occurred in the U.S. from 1992 through 1996, and women accounted for 86 percent of the people who were abused. The National Coalition Against Domestic Violence estimated that more than 50 percent of all women will experience physical violence in an intimate relationship in their lifetimes. For as many as 30 percent of these women, the violence will be regular and ongoing.
This course is focused on the problem of domestic violence in America, with a particular focus on Pennsylvania. The course will explore the various definitions and laws relevant to domestic violence and will explore the scope of the problem. Students will gain an understanding of both criminal and civil responses to incidents of domestic violence, including a thorough examination of legal proceedings which may be instituted to punish perpetrators and protect victims. Students will explore government and private services available to assist victims.
Upon successful completion of this course, students should be able to:
• Define domestic violence and related concepts
• Identify and explain the criminal laws designed to punish perpetrators and protect victims of domestic violence
• Identify and explain the scope of civil remedies to domestic violence
• Identify and explain legal proceedings associated with domestic violence cases
• Identify governmental and social services available to assist victims of domestic violence

**ADJ 223 White Collar Crime**
This course centers on the analysis of non-violent criminal behavior that uses the assumption of trust to engage in criminal conduct. Topics of discussion include: public corruption, fraud against the government, environmental crimes, corporate fraud, and other types of criminal deception to include computer fraud and are also discussed.

Upon successful completion of this course, students should be able to:
• Define the term "White Collar Crime".
• Identify the various types of White Collar Crime.
• Explain the impact of White Collar Crime on the national and international economy.
• Provide investigative strategies for the White Collar Crime investigator.
• Discuss victim-offender relationships and vulnerability of victims.
• Discuss governmental and corporate strategies employed to reduce White Collar Crime.

**ADJ 260 Corrections-Probation-Parole**
This course exposes students to the process of corrections-probation and parole. It includes an in-depth study of the historical evolution of the institutions, functions, organization and problems from antiquity to the present as well as the attendant philosophies of justice and punishment. Probation and parole as integral parts of the corrections process, and the two major rehabilitative techniques are discussed separately.

Upon successful completion of this course, students should be able to:
• Analyze the various theories that have been proposed relative to crime causality.
• Identify and apply the various bases for corrections.
• Trace the development of the correctional system in the United States.
• Evaluate the rationale that corrections is one of society's agencies of social control that attempts to rehabilitate or neutralize criminal and delinquent behavior.
• Identify and resolve the philosophical differences between custody and treatment of the offender.
• Explore and analyze the various career opportunities within the corrections process.

**ADJ 261 The Youthful Offender**
An in-depth study of factors that relate to juvenile delinquency, prevention, treatment and control; a multi-disciplinary orientated. The most popular interdisciplinary issues, ideas, principles and assumptions pertaining to delinquency are presented, as well as the duties, responsibilities and functions of the agencies in the criminal justice system that deal with the juvenile delinquent.

Upon successful completion of this course, students should be able to:
• Trace the history of the development of the concept of the delinquent child from World War II to the present.
• Demonstrate that delinquency has social, psychological and legal causes.
• Identify, describe and justify the major programs and processes that have been established by delinquency law.
• Analyze the concept of the Youth Services Bureau.
• Evaluate the legally required and discretionary responses of law enforcement agencies when dealing with the juvenile.
• Trace the juvenile justice process from police contact through the various stages of intake, pre-disposition investigation, the family court hearings, disposition and confinement.
• Analyze the strengths and weakness of incarcerating the adjudicated delinquent.
• Assess the value of present after-care strategies.
• Evaluate contemporary and future issues relevant to delinquency.

**ADJ 225 Ethics in Criminal Justice**
This course is designed to examine the professional standards of conduct and the acceptable forms of behavior within organizations in the criminal justice system. Issues concerning corruptions, perjury, false reporting, accepting of gratuities, excessive force and the code of silence will be examined. Personal and organizational integrity will be emphasized in this course.

Upon successful completion of this course, students should be able to:
• Identify professional issues within the context of ethics.

**ADJ 226 Issues and Problems**
This course provides students, particularly students of criminal justice, an overview of the legal basis, structure, organization, policies and jurisdiction of the U.S. courts. The course examines the dynamics of the U.S. courthouse, the interaction of the key participants and the quality of justice dispensed there. Finally, contemporary issues and problems such as judicial discretion, sentencing, political influence, plea negotiation, and the usurpation of the lawmaking process and power by the courts through judicial review are presented from both a philosophical and applied perspective.

Upon successful completion of this course, students should be able to:
• Identify the pivotal role of the courts in justice administration.
• Provide an overview of the legal bases of the criminal courts, criminal procedure and criminal law.
• Identify and evaluate the actors who, on a daily basis, must make the critical decisions through ministerial duties and discretionary powers to further social ordering in the U.S. courts.
• List the most common functions of U.S. judges.
• Follow the stages through which a criminal case must pass from arrest to the verdict and explain how and why cases leave the process.
• Identify the competing theories of sentencing and discuss the legal basis for the wide range of discretionary power over sentencing by the judge.

**ADJ 240 Criminology**
An examination of the field of criminology, including classical and contemporary theories, nature and causes of crime and criminal behavior. Patterns of criminal behavior, including property crimes, violent crimes, organized crime, white-collar crime, and victimless crime are discussed. A critical assessment of criminal justice system and its ability to respond to crime as a social problem is conducted.

Upon successful completion of this course, students should be able to:
• Differentiate between the legal and non-legal definitions of crime and the criminal.
• Identify the various indices of crime in America.
• Trace the historical evolution of law and crime in western societies from a private to a public concern.
• Explain the major theories of crime causation.
• Identify the components, roles and functions of the criminal justice system in terms of the sociology of law and the administration of justice.

**ADJ 250 Contemporary Police Services**
An examination of the foundations of police services that include both patrol and investigative functions. The course is directed to analysis and commentary of municipal police as an agency of law enforcement and human services delivery. Topical areas include training, enforcement procedures, structure and organization, philosophy and contemporary issues regarding stress, unionization, employment practices, youth problems, human relation issues, corruption and accountability.

Upon successful completion of this course, students should be able to:
• Explain the distribution of police power within the U.S. governmental system.
• Discuss the role, discretion and limits of police power in a democracy.
• Explicate the importance of uniformed patrol in modern police service.
• Analyze the dynamics of stress, perceptions of authority and communication in police encounters.

**ADJ 262 U.S. Courts: Contemporary Issues and Problems**
This course provides students, particularly students of criminal justice, an overview of the legal basis, structure, organization, policies and jurisdiction of the U.S. courts. The course examines the dynamics of the U.S. courthouse, the interaction of the key participants and the quality of justice dispensed there. Finally, contemporary issues and problems such as judicial discretion, sentencing, political influence, plea negotiation, and the usurpation of the lawmaking process and power by the courts through judicial review are presented from both a philosophical and applied perspective.

Upon successful completion of this course, students should be able to:
• Identify the pivotal role of the courts in justice administration.
• Provide an overview of the legal bases of the criminal courts, criminal procedure and criminal law.
• Identify and evaluate the actors who, on a daily basis, must make the critical decisions through ministerial duties and discretionary powers to further social ordering in the U.S. courts.
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• Follow the stages through which a criminal case must pass from arrest to the verdict and explain how and why cases leave the process.
• Identify the competing theories of sentencing and discuss the legal basis for the wide range of discretionary power over sentencing by the judge.

**ADJ 101 and ADJ 110**
This course is directed to analysis and commentary of the U.S. courthouse, the interaction of the key participants and the quality of justice dispensed there and the power of the courts through judicial review are presented from both a philosophical and applied perspective.

Upon successful completion of this course, students should be able to:
• Identify the pivotal role of the courts in justice administration.
• To provide students with a fundamental look at the structure of, and interaction with, American trial procedure and litigation. In addition to reviewing the basic legal concepts that underlie American state courts, students examine actual court decisions and observe the findings of judges, juries, prosecutors, defense attorneys, defendants and other key actors in the judicial process. This course will provide students with a fundamental understanding of courtroom procedure, and the theory underpinning the Rules of Civil and Criminal Procedure and the Rules of Evidence. The dynamics of a state courthouse, the interaction of the key participants, and the quality of justice dispensed there and the power of the courts through judicial review are presented from both a philosophical and applied perspective.

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AHA 207    Ethical/Legal Aspects of Health Care Management  

Rapid advances in medical technology challenge legal and ethical standards, and create situations requiring moral decisions. This course provides students with an introduction to law, ethics and bioethics as they apply to decision making in the health care setting. It is not the intent to provide students with right or wrong answers for ethical issues. Emphasis is on use of appropriate language, application of ethical principles, and use of critical-thinking skills to articulate a point of view on current issues in health care.

Upon successful completion of this course, students should be able to:
- Use appropriate terminology to discuss ethical/legal issues in health care.
- Explain the nature of human value development.
- Analyze common theories and methods in making ethical decisions.
- Evaluate ethical/legal positions that pertain to current controversies in health care.
- Describe legal concepts of concern to the health care manager.

3 Credits  3 Weekly Lecture Hours

AHA 208    Philosophy of Managed Care  

Managed care is now mainstream in America’s health care system and has changed the delivery of health care services. Individuals working in the health care arena need to understand the impact of managed care on patients and providers. This course will review the evolution of managed care explore how it works, contemplate its future and discuss the ethical issues surrounding it today. Also in the course the roles and responsibilities of the case manager will be investigated, as well as the tools used to coordinate the delivery of cost-effective quality care.

Upon successful completion of this course, students should be able to:
- Describe concepts of the philosophy of managed care.
- Explain the paradigm shift from fee-for-service to capitation.
- Define specific terminology utilized in managed care models.
- Specify the roles and responsibilities of the case manager.
- Identify critical components in developing and implementing treatment plans.
- Explain the role of critical paths and disease management strategies.
- Describe the role of the case manager and/or health care provider in client advocacy and ethical decision making.

Pre req.  AHA 100, AHA 233, AHA 140, AHA 207

3 Credits  3 Weekly Lecture Hours

AHA 209    Outcomes Measurement and Management  

Health care providers constantly gather data to reach diagnostic conclusions and guide a patient through a treatment course that will optimize the eventual outcome. The driving forces of health care economics mandate that health care providers monitor and evaluate clinical effectiveness as well as the performance of the health care organization. This course addresses measurement as a basis for making judgments and decisions about outcomes as well as measurement as a basis for future improvements. The results of outcomes and their interest to providers, accrediting bodies, purchasers and users of providers’ services are used both to stimulate contemporary thinking about important dimensions of outcomes measurement as well as the design of patient-centered frameworks for managing and improving care and services.

Upon successful completion of this course, students should be able to:
- Apply the concepts and methods of outcomes measurement.
- Identify the benefits and barriers to measurement of outcomes.
- Relate the interconnected processes that affect patient health outcomes.
- Describe current techniques in assessing clinical and organizational effectiveness.

Pre req.  AHA 209

3 Credits  3 Weekly Lecture Hours

AHA 210    Reimbursement and Financing Methods  

Health care is the largest service industry in the United States. Health care managers are controllers of significant financial resources that must be managed with an eye toward the bottom line in a highly competitive marketplace. They must be well versed in the areas of financial planning, budget controls and reimbursement for services provided. This course provides information and detailed approaches for the construction and monitoring of a budget in a health care setting. It also explores reimbursement trends and issues from the perspectives of providers, payers and consumers of health care.

Upon successful completion of this course, students should be able to:
- Define terminology used in discussing the financial aspects of health care.
- Describe strategies and processes for projecting supply expenses, as well as costs related to personnel salaries and fringe benefits.
- Develop a format for capital budget planning.
- Formulate a budget request.
- Explain the steps necessary to monitor and control a budget.
- Identify the implications of managed competition and global budgeting on reimbursement initiatives.
- Analyze the impact of health care reform and changing reimbursement strategies on department management.
- Evaluate the effects of cost containment measures used by multiple entities in the health care continuum.
- Describe the emerging methods of reimbursement in fee-for-service and managed care environments.

Pre req.  AHA 209

3 Credits  3 Weekly Lecture Hours

AHA 211    Organized Crime  

A foundation course in systematic criminality that addresses those organizations whose method of operation includes fear, violence and corruption to achieve strategic and financial goals. These organizations are highly structured and staffed by hard-core, disciplined career criminals operating in secrecy and anonymity through the legal, quasi-legal and criminal activities. Governmental agencies responsible for investigating organized crime as well as legal sanctions employed by these agencies will also be examined.

Upon successful completion of this course, students should be able to:
- Define Organized Crime.
- Explain the history of organized crime in America.
- Identify and explain the areas of influence employed by organized crime.
- Prepare an overview of the international impact of organized crime.
- Discuss the tactical and strategic response of governmental entities to counter the influence of organized crime.

Pre req.  ADJ 101 and ADJ 110

3 Credits  3 Weekly Lecture Hours

AHA 212    Philosophy of Managed Care  

Managed care is now mainstream in America’s health care system and has changed the delivery of health care services. Individuals working in the health care arena need to understand the impact of managed care on patients and providers. This course will review the evolution of managed care explore how it works, contemplate its future and discuss the ethical issues surrounding it today. Also in the course the roles and responsibilities of the case manager will be investigated, as well as the tools used to coordinate the delivery of cost-effective quality care.

Upon successful completion of this course, students should be able to:
- Describe concepts of the philosophy of managed care.
- Explain the paradigm shift from fee-for-service to capitation.
- Define specific terminology utilized in managed care models.
- Specify the roles and responsibilities of the case manager.
- Identify critical components in developing and implementing treatment plans.
- Explain the role of critical paths and disease management strategies.
- Describe the role of the case manager and/or health care provider in client advocacy and ethical decision making.

Pre req.  AHA 100, AHA 233, AHA 140, AHA 207

3 Credits  3 Weekly Lecture Hours

AHA 213    Managing Utilization and Risk  

It is essential for health care facilities to be able to control and manage the use of their services to minimize the risk of financial loss. Utilization review monitors and provides appropriate incentives to influence the use of health care services. Risk management employs proactive efforts to prevent adverse events related to clinical care and facility operations, especially malpractice. The proper use of utilization review and risk management measures has the potential to achieve significant containment of health care costs, an essential outcome in our present health care system.

This course explores the concepts of risk management and utilization review in payer and provider organizations.

Upon successful completion of this course, students should be able to:
- Trace the history and development of utilization review and risk management processes.
- Describe the requirements for utilization review procedures in relation to various payer organizations (managed Medicare, Medical Assistance and private insurers). Analyze the role of the physician and other health care personnel in utilization review.
- List the various mechanisms used in the utilization review process by payer and provider organizations.
- Explain the role of the health care manager in the utilization review process.
- Trace the development of legal doctrines and concepts of individual responsibility.
- Cite landmark court decisions that have increased the liability of health care institutions.
- Identify the procedures used for documenting and reporting deviations from institution policy or accepted standards.
- Develop a description of the role and rationale for a health care institution manager’s participation in the risk management process.

Pre req.  AHA 209

3 Credits  3 Weekly Lecture Hours

AHA 214    Quality Improvement and Accreditation Process  

As the health care delivery environment changes, regulatory systems evolve to meet consumer mandates for objective measure of organizational performance, and the quality and effectiveness of health care services. Quality of care is more than a vague concept; it is how an institution and its care providers perform. Measuring performance requires managing both processes and outcomes, quantifying performance results and taking action to improve results.

This course presents a design for performance assessment and improvement planning, goals and objectives, essential elements and a cultural climate for change. It also presents a practical introduction to accreditation processes. The requirements of the Joint Commission for Accreditation of Healthcare Organizations (JCAHO) and other accrediting bodies are explored. Current accreditation trends and issues are also discussed.

Pre req.  AHA 209

3 Credits  3 Weekly Lecture Hours
Upon successful completion of this course, students should be able to:

• Identify important elements of ongoing data collection.
• Describe essential steps in developing performance-based assessment programs.
• Discuss techniques for comparing institutional performance to external performance data.
• Relate JCAHO standards to institutional assessment and improvement initiatives.
• Assess the value and purpose of the accreditation process and JCAHO accreditation standards.
• Discuss current management concepts related to organizational performance measurement and improvement.
• Consider the role of health care data/information management and health care databases as mechanisms for organizational performance measurement.
• Review the development and focus of JCAHO’s functional approach to performance measurement and improvement in health care organizations.
• Explore current literature relevant to organizational performance improvement and accreditation issues.

Prep. AHA 209  
3 Credits  3 Weekly Lecture Hours

(AHM) Allied Health Medical

AHM 105  Body Structure/Function II

This course emphasizes the anatomical structure, physiology, and selective disease processes specific to the digestive system, urinary system, nervous system and sense organs, endocrine system, and reproductive systems. How nutrition, growth, development, aging, and genetics influence body structure and function is also emphasized.

Upon successful completion of this course, students should be able to:

• Describe the structure and function of the digestive system as well as disorders of this system.
• Describe adequate nutrition and the complex mechanism of metabolism, as well as disorders associated with eating and metabolism.
• Describe the structure and function of the urinary system and major disorders of this system.
• Describe the structure and function of the nervous system and disorders of this system.
• Describe the mechanisms by which the sense organs are able to sense changes in our external and internal environments as a requirement for maintaining homeostatic; and diseases commonly affecting the sense organs.
• Describe the structure and function of the endocrine system and major disorders of this system.
• Describe the structure and function of the male and female reproductive systems, and briefly describe the major disorders inherent to these systems as well as major disorders associated with pregnancy.
• Describe the concept of development as a biological process characterized by continuous modification and change as well as the effects of aging on major body organ systems.
• Describe genetics, the scientific study of inheritance, and its relationship to human disease.
• Describe the physiology of congenital diseases and the roles that heredity and environmental factors play in the development of these conditions.

Coreq. AHM 233  
3 Credits  3 Weekly Lecture Hours

AHM 106  Medical Assistant Techniques and Practicum I

This course is structured to prepare the student to assist the physician in the clinic, hospital or private office. The responsibilities include preparation of the client for examination, measurement of basic body functions, assistance in diagnostic testing and procedures, and general clinical procedures performed in the medical office.

Upon successful completion of this course, students should be able to:

• Understand the role and function of the medical assistant in the health care delivery system.
• Evaluate the impact of disease and disease causing organisms on man and his environment.
• Describe the role of the medical assistant in assisting with physical measurements.
• Analyze the role of the medical assistant in assisting the physician with the health history and physical examination.
• Understand the role of the medical assistant in the collecting and handling of specimens.

Prep. AHM 104 or 105 or BIO 150  
3 Credits  3 Weekly Lecture Hours

AHM 109  Medical Assistant Review Practicum I

This course is structured to provide the student with a review of the AHM 106 simulation laboratory experience in assisting the physician in the clinic, hospital or private office. Clinical skills covered include preparation of the client for examination, measurement of basic body functions, assistance in diagnostic testing and procedures, and general patient care procedures performed in the medical office.

Upon successful completion of this course, students should be able to:

• Understand the role and function of the medical assistant in assisting the physician in minor surgery.
• Understand the importance of nutrition, exercise, and diet therapy to the well being of the patient.
• Students are eligible to enroll in this course only if they are able to complete the certificate requirements of the Medical Assistant program by the upcoming Summer I or Summer II semester.

Prep. ENG 050, REA 050, MAT 040 or pass test  
4 Credits  3 Weekly Lecture Hours  2 Weekly Laboratory Hours
assistant in the health care delivery system. • Describe the role of the medical assistant in assisting with physical measurements. • Analyze the role of the medical assistant in assisting the physician with the health history and physical examination. • Understand the role of the medical assistant in the collecting and handling of specimens. • Analyze the role of the medical assistant in assisting the physician in minor surgery. 

Prereq. AHM 106
1 Credit 2 Weekly Laboratory Hours

AHM 110 Medical Assistant Review Practicum II

The course prepares students with simulation laboratory experience in assisting the physician in the clinic, hospital or private office. Responsibilities include preparation of the client for examination, measurements of body functions, aiding in diagnostic tests and procedures, and general operation of the office.

Upon successful completion of this course the student will be able to:
• Apply the principles of pharmacology and drug administration.
• Perform diagnostic laboratory procedures that are utilized in a physician's office.
• Perform an EKG.
• Describe the role of the medical assistant in assisting with physical therapy.
• Evaluate the role of the medical assistant during a medical emergency and giving first aid.

Prereq. AHM 106 & 107
1 Credit 2 Weekly Laboratory Hours

AHM 130 Medical Coding Concepts for Allied Health

This course, for non-coding majors, is designed to teach students general principles of ICD-9-CM (International Classification of Disease) and CPT-4 (Current Procedural Terminology) coding. Students will learn to translate medical terminology and descriptions into code numbers. In this course will focus on coding for both inpatient and outpatient procedures. Emphasis will be placed on accuracy of coding in a variety of settings.

Upon successful completion of this course, students should be able to:
• Explain the organization of both the ICD-9-CM manual and CPT-4 manual.
• Translate descriptions of diagnostic terms and symptoms into correct ICD-9-CM codes.
• Recognize and use the HCPCS (Health Common Procedural Coding System) for Medicare patients.
• Describe the DRG system and why it is of importance.
• Convert descriptions of inpatient surgical procedures into correct ICD-9-CM codes.
• Select valid CPT-4 codes and apply them to outpatient procedures for laboratory (pathology), diagnostic testing and outpatient surgical procedures.
• Apply rules and guidelines for assigning correct ICD-9-CM codes.

Prereq. AHM 130
3 Credits 3 Weekly Lecture Hours

AHM 185 Medical Office Management

This course is designed to provide the student with an understanding of how a medical office runs, and the responsibilities of all staff members. In this course, the student will learn through a variety of media, how to find a position in the medical field, a history of medicine, ethical and legal considerations in medicine as well as how to handle finances for a medical office/facility.

Upon successful completion of this course, the student should be able to:
• Describe the ethical and legal responsibilities of a medical office administrator.
• Demonstrate effective oral and written communication with both professionals and patients.
• Complete and evaluate third party payer requirements.
• Use and understand systems of maintaining patient clinical and financial records.
• Perform office tasks appropriate for computer solutions.
• Organize and maintain the physical requirements of a medical office.

Prereq. AHM 185
3 Credits 3 Weekly Lecture Hours

AHM 189 Medical Assistant Practicum

Selected clinical experiences are provided in a medical office or health care facility. This is a planned activity that must be scheduled with the coordination of the Medical Assistant program. This course is offered spring, summer session I and II semesters.

Upon successful completion of this course, students should be able to:
• Demonstrate an understanding of the anatomical structure and physiological functioning of the human body and of medical terms descriptive of body systems.
• Apply the business/administrative and clinical duties of the medical assistant.
• Function as an assistant to the physician in a medical and/or other health care setting.
• Implement the ethical and legal responsibilities of the medical assistant in the medical office/hospital setting.
• Identify the major elements of the DRG system.
• Understand the code of ethics for coders.

Prereq. AHM 233, AHM 104, AHM 105
3 Credits 3 Weekly Lecture Hours

AHM 220 Applied Microbiology

This is a survey course intended for allied health majors. The concepts of specimen collection and transport, identification of microorganisms, pathogenesis and control, and treatment of infectious diseases are the main emphasis of the course. Clinical laboratory experiences will emphasize application of concepts to skills.

Upon successful completion of this course, students should be able to:
• Explain the relationship between the structure and function of microorganisms.
• Describe techniques of microbial control.
• Apply principles of sterile technique in specimen collection and performing laboratory procedures in the microbiology lab.
• Describe the distribution of normal and pathogenic flora for different body sites.
• Discuss antibiotic treatment for disease.
• Classify and perform diagnostic procedures of body fluid specimens.

1 Credit 2 Weekly Lecture Hours 2 Weekly Laboratory Hours
Upon successful completion of this course the student will be able to:

- Code accurately a procedural statement, a physician’s office visit claim, and an outpatient record, according to CPT guidelines.
- Recognize the economic and ethical implications of coding assignment on reimbursement.
- Determine if coded data is of optimal quality.

Prereq. AHM 231

3 Credits  3 Weekly Lecture Hours

AHM 233 Medical Terminology

This course introduces the skills and knowledge needed to develop an understanding of the language of medicine. The mechanism of building a medical vocabulary utilizing roots, prefixes, suffixes and the combining forms, as well as the pronunciation of medical terms is emphasized. A workbook/text, audio and computer software are used to give the student hands-on experience in the use of the language of medicine.

Upon successful completion of this course, students should be able to:

- Identify word parts and their meanings in medical terms.
- Utilize reference materials to determine meaning, usage and spelling of medical terms.
- Describe the main functions of each body system.
- Define diagnostic, symptomatic and therapeutic terms related to each system.
- Identify terms describing pathology affecting body systems.
- Define anatomical landmarks, directional, positional and numeric medical terms.
- Recognize common classes of drugs and their actions.
- Recognize the correct spelling of medical terms.
- Develop a medical vocabulary.

AHM 240 Advanced ICD-9-CM Coding

This course is designed for students who plan to work in the medical record department of a health care facility. It is intended to provide additional in-depth study of medical record case studies to increase knowledge and skills in ICD-9-CM diagnosis coding. DRG reimbursement methodology will also be addressed.

Upon successful completion of this course, the student should be able to:

- Given a scenario, extract the relevant diagnoses and/or procedures and code appropriately according to ICD-9-CM guidelines.
- Apply coding guidelines to accurately code principal diagnoses and procedures to determine the correct diagnosis-related group assignments.
- Demonstrate the use of ICD-9-CM coding in DRG assignment.
- Recognize the economic and ethical implications of coding assignment on reimbursement.

Prereq. AHM 230

3 Credits  3 Weekly Lecture Hours

AHM 241 Medical Billing

This course is designed to teach coding students the general principles of medical billing. Students will learn to complete and use insurance claims forms and insurance related forms (referrals, pre-authorizations, registration forms). The textbook, class-work and homework activities, lectures and online assignments will provide students with hands-on experiences with a variety of insurance plans and related situations. Reimbursement systems including fee-for-service payments and capitation payments will be covered in detail.

Upon successful completion of this course, students should be able to:

- Describe legal and ethical issues involved in medical billing.
- Describe and explain different types of health insurance carriers and reimbursement systems as well as rules and regulations for each (private insurance, managed care, Medicare, Medicaid, Workers Compensation, Military insurance).
- List steps involved in the reimbursement cycle and accurately complete insurance related forms in addition to creating financial reports.
- Prepare referral, preauthorization, registration and encounter forms.
- Initiate claims in paper and electronic format.
- Document billing information using correct medical terminology and perform an internal and external chart audit.
- Prepare a health insurance claim form and explain claim form requirements.
- Identify claim errors and learn how to resubmit claims that have been rejected.
- Generate patient bills when needed through interpretation of explanations of benefits/remittance advice statements.
- Describe the follow up process with insurance companies and patients regarding unpaid bills.
- Record changes, payments, and adjustments at the time of an encounter.

Prereq. AHM 230, AHM 231

3 Credits  3 Weekly Lecture Hours

AHN 100 Nursing Assistant Theory and Practice I

This course is designed to enable the student to acquire the knowledge and skills necessary to function as a nursing assistant in a long-term-care nursing facility in accordance with regulatory guidelines established by the Commonwealth of Pennsylvania.

Upon successful completion of this course, students should be able to:

- Function as a nursing assistant within the legal and ethical standards described by the profession of nursing as regulated by the Commonwealth of Pennsylvania.
- Demonstrate the use of effective communication skills as an integral function of the nursing assistant role.
- Apply the basic principles of infection control.
- Demonstrate the application of concepts of basic emergency procedures.
- Describe the behavior involved in providing/maintaining the rights of the resident.
- Demonstrate behaviors and skills that promote the resident’s independence.
- Describe the responsibilities of the nursing assistant in addressing the nutritional needs of the resident.
- Recognize abnormal signs and symptoms of common diseases and conditions.
- Provide for a safe, clean environment.
- Demonstrate basic nursing skills needed to meet the resident’s health and personal care requirements as directed by the licensed nurse.
- Provide care to resident when death is imminent.
- Demonstrate skills that incorporate principles of restorative care under the direction of a licensed nurse.
- Demonstrate basic skills required to identify psychosocial needs and special problems of the nursing facility or health care agency population with disorders affecting mental and physical functioning.
- Demonstrate skills required to identify psychosocial needs for residents who are cognitively impaired.

Prerequisites: High school diploma or GED. Students must meet DCCC clinical and physical program requirements.

AHN 291 Skin Care and Nutrition

This course explores the structure and function of the skin as an organ of protection for the body, and the nutritional needs of the person in respect to normal aging and in the presence of infection and varied disease processes. The content will include identification of and
**AHN 292 Geriatrics & Mental Health**

This course examines the mental and behavioral changes that constitute normal aging along with the disorders that affect mental health in the elderly. Diversity of personality characteristics among the elderly while recognizing neurological and behavioral disorders that primarily affect the elderly will be explored. Alzheimer’s Disease, and other organic brain diseases, psychological disorders and behaviors that affect socialization will be discussed. Upon successful completion of this course, students should be able to:

- Understand general concepts related to the field of geriatrics.
- Recognize the signs and symptoms of different neurological, psychological, and behavioral disorders.
- Identify methods used to provide care and comfort for clients with neurological, psychological, and behavioral disorders.

**AHN 293 Mentoring & Leadership Skills**

The course is designed to teach students peer-mentoring as a means of providing on-the-job guidance to other direct care workers. Students will also learn beginning management and leadership skills that can be applied to the supervisory role. Upon successful completion of this course, students should be able to:

- Understand the role of the peer-mentoring in long term care.
- Recognize the elements of good communication skills and their importance in mentoring.
- Recognize the significance of cultural diversity among personnel and patients within the health care industry.
- Comprehend the basics of time, stress and conflict management skills.
- Know the fundamental elements of good leadership within the health care setting.

**AHN 294 Concepts in Phys Therapy**

This course is designed to teach students the concepts of physical rehabilitation and restorative care and to assist residents with a physical therapy plan of care under the supervision of a licensed Physical Therapist. Upon successful completion of this course, students should be able to:

- Understand the primary functions of the musculoskeletal system in providing safety and movement.
- Recognize the effects and benefits of rest, activity and exercise on the human body.
- Comprehend the common rehabilitative/restorative treatments frequently prescribed for the elderly.
- Recognize the importance of proper body mechanics in caring for residents with mobility deficits.
- Apply methods to assist in performing active and active-assistive movements designed to restore and maintain physical function under the supervision of the licensed therapist or nurse.

**AHN 295 Geriatric Wound Prevention and Care**

This course explores the fundamentals concepts of wound formation in the elderly along with wound prevention and treatment techniques. Emphasis will be placed on the observation and recognition of wound formation of vascular, pressure and diabetic ulcers, along with the assistant’s role in the wound care process. Upon successful completion of this course, students should be able to:

- Describe the causes of wound development in the geriatric population.
- Explain the importance of wound prevention measures in the elderly.
- Identify optimal wound care procedures for the elderly.

**AHN 297 EKG Concepts Special Studies**

The goal of this course is to teach accurate lead placement and acquisition of a twelve lead EKG within the scope of practice of a Nursing Assistant or Patient Care Technician in both hospitals and ambulatory care facilities. The role of the Nursing Assistant/Patient Care Technician has evolved and expanded to include diagnostic testing skills that are performed under the supervision of the professional nurse or other licensed health professional. Upon successful completion of this course, students should be able to:

- Understand the underlying mechanisms involved in the electrocardiograph that leads to the tracing called the electrocardiogram.
- Identify the four chambers of the heart and the valves that separate them.
- Describe the electrical conduction system of the heart, and its purpose as it relates to the autonomic nervous system.
- Define the term Anatomical Position.
- Place the patient in the proper position that defines above term listed in behavioral objective.
- Understand the difference between the terms Superior and Inferior as it relates to Anatomical Positioning.
- Place the P, ORS and T waves in proper sequence on the waveform.
- Identify the parts of the electrocardiograph machine.
- Demonstrate the proper placement of lead wires in the twelve lead electrocardiograph.

**AHN 100 Surgical Technology I**

The basic knowledge and fundamental techniques necessary for assuming the responsibilities of a surgical technologist are highlighted. Preoperative and intraoperative patient care concepts, with both nonsterile and sterile responsibilities, are emphasized. Workplace management concepts, such as medical-legal aspects, ethics, cultural sensitivity, the hospital and operating room environment, and scope of practice are introduced. This course also includes study and skill development relating to surgical instrumentation, devices and equipment; modes of patient transport and safety precautions; variations and precautions in surgical positioning and care of surgical patients; preoperative patient preparation including surgical site antisepsis; consent for surgery; use of the Universal Protocol for surgical procedure, patient and site verification; and other important intraoperative risk management processes and procedures. Related patient care procedures such as taking vital signs, laboratory study review, wound healing, specimen management, intraoperative medication management, anesthetic, sterilization and disinfection are included. Upon successful completion of this course, students should be able to:

- Describe the role, function and relationship of the surgical technologist to other members of the surgical team.
- Utilize a vocabulary of medical terms related to surgical patient care.
- Identify microbiological principles underlying the prevention and control of infection, sterilization and disinfection methods, and aseptic technique.
- Review common safety risks for surgical patients and the strategies to manage them before and during a surgical intervention.
- Discuss the preoperative nonsterile and sterile responsibilities of the surgical technologist in the preparation of a patient for a surgical procedure.
- Discuss the case management responsibilities of the surgical technologist in the preparation of the operating room for a surgical procedure.
- Describe the intraoperative responsibilities of the surgical technologist in performing the role of the scrubbed team member during a surgical procedure.

**AHN 101 Surgical Technology Practicum I**

This course includes clinical assignment in operating room of affiliating health agencies. Selected learning experience in the application of preoperative and intraoperative patient care concepts, with both nonsterile and sterile responsibilities, are emphasized as the student integrates theory with practice during assignment to surgical patients undergoing basic surgical interventions. Upon successful completion of this course, students should be able to:

- Demonstrate correct opening and preparation of supplies used in the operating room.
- Demonstrate competency in handling basic surgical instruments and devices.
- Establish a safe operating room environment for the surgical patient.
- Utilize sterile technique when creating and maintaining surgical field.
- Demonstrate competency in hand and surgical site antisepsis, gowning and gloving the self and members of the surgical team.
- Participate in intraoperative activities such as surgical counts, suture preparation, and involvement in other basic intraoperative case management activities.
- Participate in preoperative case management activities such as patient transport and positioning patients in the surgical position designated by surgeon.
• Participate in the terminal cleaning, sterilization, and packaging of sterile instruments and supplies.

Co-Requisite: Clearance card from College Health Office
Coreq. AHS 100
5 Credits 10 Weekly Laboratory Hours

AHS 102 Surgical Technology II
This course is a continuation of Surgical Technology I. Knowledge and techniques basic to effective performance as a scrubbed team member in the operating room will be stressed. An intense review of the surgical specialties focuses on pathophysiology, diagnostic interventions, the surgical intervention (special considerations, position/positioning aids, incisions, supplies, equipment, instrumentation, procedural steps, counts and specimen care) and complications. The responsibilities of the surgical technologist in intraoperative case management during intermediate surgical interventions are emphasized. The role of the unsterile circulating team member is reviewed as the concepts of teamwork, consideration and cooperation of the surgical team are explored.

Upon successful completion of this course, students should be able to:
• Describe the responsibilities of the surgical technologist in assisting the registered nurse circulator during a surgical procedure.
• Identify surgical interventions, instruments sutures and accessory items used during intermediate surgical interventions such as the following: hernia repair; breast surgery; thyroid and parathyroid surgery; surgery of the biliary tract, pancreas and spleen; gastrointestinal surgery; gynecological surgery; genitourinary surgery; thoracic surgery; vascular surgery; cardiac surgery; neurosurgery; ENT; and orthopedic surgery.

AHS 200 Surgical Technology III
This course is a continuation of Surgical Technique II. Knowledge and techniques basic to effective performance as a scrubbed team member in the operating room are stressed. The responsibilities of the surgical technologist in the care and safety of the patient during and after the surgical interventions, in the general and specialty fields of surgery are reviewed. Adaptation, utilizing change-agent theory and conflict resolution approaches will be discussed.

Upon successful completion of this course, students should be able to:
• Identify operative procedures, surgical instruments, accessory items and suture materials used in advanced surgical interventions such as surgery of the eye, plastic and reconstructive surgery, pediatric surgery, and surgery of the burn, trauma and transplant patient.

PreReq. AHS 102, AHS 103
1 Credit 3 Weekly Lecture Hours

AHS 201 Surgical Technology Practicum III
Clinical assignment in the operating room of an affiliating agency. Selected learning experiences advanced surgical interventions in general and specialty surgery are included. Focus is directed on independent role assumption as a surgical technologist to facilitate transition from student to graduate.

Upon successful completion of this course, students should be able to:
• Assemble the instruments and supplies necessary for advanced surgical interventions such as surgery of the eye; plastic and reconstructive surgery; pediatric surgery; burn surgery; trauma surgery; and transplant surgery.

PreReq. AHS 200
6 Credits 24 Weekly Laboratory Hours

(AHU) Allied Health Unit Clerk

AHU 100 H.U.C. Theory and Technique
This course is designed to enable students to acquire knowledge and skill necessary to function as a health unit coordinator in a health care facility.

Students who have successfully completed this course should be able to:
• Discuss the organizational structure of a health care facility.
• Describe hospital policies and procedures affecting the job performance of the health unit coordinator in the health care facility.
• Discuss the process of communication.
• Describe the receptionist's duties of the health unit coordinator in the nursing station.
• Describe the job responsibility of the health unit coordinator in maintaining a patient's chart.
• Describe the responsibilities of the health unit coordinator in transcribing physician's orders.
• List the guidelines for job placement of the health unit coordinator.
• Apply the principles of the health unit coordinator in a clinical setting.

PreReq. AHS 102
3 Credits 3 Weekly Lecture Hours

ARB 101 Elementary Arabic I
This course introduces students to Arabic alphabets, articulation of sounds, basic grammar, reading and writing. Vocabulary words for cultural and social settings are introduced. Listening and speaking are emphasized in class and laboratory settings.

Upon successful completion of this course, students should be able to:
• Learn Arabic alphabets, sounds and articulation
• Recognize one-way and two-way connector letters
• Sound and write accurately long and short vowels
• Identify the Arabic marking system for long and short vowels
• Develop basic vocabulary, reading and comprehension
• Apply basic grammatical structure in writing
• Understand social manners and behavior in Arabic culture

PreReq. AHS 102
3 Credits 3 Weekly Lecture Hours

ARB 102 Elementary Arabic II
This course is designed to help students become more proficient in the four skills of Modern Standard Arabic: reading, writing, listening and speaking.

Upon completion of this course, students should be able to:
• Read and pronounce the Arabic sounds correctly
• Take dictation and apply critical auditory and recognition skills for short and long vowels
• Write short sentences and paragraphs using basic grammatical structure
• Translate simple paragraphs and sentences from Arabic to English and English to Arabic
• Converse about oneself, family and other social/cultural settings using vocabulary and grammar accurately
• Develop awareness and understanding of the cultural, social, religious, political and geographical diversity of the Arab world

PreReq. ARB 101
3 Credits 3 Weekly Lecture Hours

(ARC) Architecture

ARC 121 Architectural Graphics I
An introduction to the fundamentals of drafting for architectural construction, the course is primarily directed at developing construction documentation skills with a review of light frame construction materials and methods.

The course begins with instruction in the application of basic hand sketching and computer-aided drafting skills and the fundamental principles of graphic delineation. It leads students through the development of a set of residential construction documents. Included is an overview of reprographic techniques for the use of related office equipment such as the Diazo whiteprinter and electrostatic copier.

Upon successful completion of the course, students should be able to:
• Demonstrate familiarity with reprographic techniques for basic office equipment and processes used in construction documentation.
• Select appropriate light frame, residential construction material and assemblies in response to a schematic architectural design.
• Solve design development problems, given a preliminary design concept, involving issues of space function and layout, construction detail and aesthetics.
• Prepare graphic documentation, using computer assisted drafting, to communicate a residential design concept and concerns that characterize design decisions. The course emphasizes the need to conceive and manipulate architecture as space.

Architecture programming is introduced along with conceptual diagramming techniques and development of preliminary plans. Design projects develop the ability to organize space in two- and three-dimensional contexts. Selected technical topics such as stairway design, complex roof intersections and egress requirements may be introduced.

Upon successful completion of this course, students should be able to:
• Select and manipulate, manually and with CADD, various drawing types that are used in analyzing and creating design solutions.
• Recognize and characterize spatial elements and concepts.
• Develop and utilize a set of space definitions and an architectural program.
• Analyze and document site opportunities and constraints.
• Develop a preliminary design concept from an organizational diagram.
• Complete a design development from a preliminary concept.
• Calculate or apply standard design performance measures.

Prereq. ARC 121
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

ARC 221 Architectural Graphics II
An advanced-level course in the graphic documentation of construction concepts using manual sketching and CADD techniques. Emphasis is placed on the development of working drawings for commercial buildings and site construction. Principles of materials and methods of construction are integrated into a project where the student is required to derive and document solutions to site development, structural, building envelope and finish-material systems.

Upon successful completion of this course, students should be able to:
• Make preliminary selection and sizing of structural components from standard load tables.
• Apply basic building code requirements to schematic design concepts.
• Develop details for major architectural systems and components.
• Analyze the overall design and details to accommodate the needs of working loads, weather, thermal shock, constructability, working tolerances and occupancy use.
• Complete a set of construction documents for a modest commercial structure using CADD systems.

Prereq. ARC 215, TCS 111
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

ARC 226 Mechanical and Electrical Systems in Buildings
This course presents a quantitative and qualitative survey of lighting, power distribution and heating, ventilating and cooling systems in buildings. Emphasis is placed on considering the impact of design decisions on life cycle costs and operations issues.

Upon successful completion of this course, students should be able to:
• Discuss the various configurations of equipment used in hot air, hot water and steam heating systems and their functions.
• Show how domestic hot-water systems function utilizing alternative fuels.
• Explain how electric power and lighting systems are distributed through a building.
• Determine, from architectural drawings, the U factor of a building.
• Calculate heating requirements for homes in various geographical locations.
• Determine, from architectural drawings and specifications, the type of heating and/or air conditioning system specified.
• Discuss the role of insulation and other envelope design elements in energy management.
• Identify structural envelope leaks and specify means for correcting them.
• Discuss Passive and Active solar energy collection system design theory and relate them to specific problems.

Prereq. TCS 112, PHY 110
3 Credits 3 Weekly Lecture Hours

(ART) Art

ART 100 Art and Childhood Development
This course examines artistic development and expression in childhood. Emphasis will be on actual artistic production the visual language of art including the principles of design and color and on issues of aesthetics and response strategies in relation to art criticism and art history. The cognitive developmental stages of artistic growth in childhood and psychomotor skills will serve as a foundation in preparation for curriculum planning.

Upon successful completion of this course, students should be able to:
• Develop and apply techniques to motivate children of elementary school age to explore, discover, manipulate and create artworks in various art media reflective of their particular developmental stage.
• Distinguish basic principles of artistic design and color theory and to integrate these ideas into general curriculum planning and artistic production.
• Identify and describe a child’s art production in stages of creative, emotional and mental growth.
• Analyze student/children’s artwork according to aesthetic issues.
• Utilize a broad view of art historical content and how it relates to student/children’s artwork.
• Produce a wide range of projects applicable to curriculum planning within the elementary school but based on the cognitive and motor skills indicative of a university-level student.

ART 110 Art History I
This course surveys the artistic styles from prehistoric art to the Proto-Renaissance. Painting, sculpture and architecture are studied as individual works in relationship to the social and religious contexts. Issues concerning iconography and biography will also be a focus of this course.

Upon successful completion of this course, students should be able to:
• Analyze representative art of prehistoric Europe, Egypt, The Ancient Near East, The Aegyptian, Greece, Rome, Medieval Europe and the Proto-Renaissance in Europe. Explain the techniques used in the painting, sculpture and architecture of the period.
• Define the technical terms associated with the description of art.
• Identify stylistic changes affected by geography, politics and religion.
• Visually identify stylistic differentiation of any work(s) from the above time periods.

Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

ART 111 Art History II
This course surveys the artistic styles from the Renaissance through the 21st Century. Painting, sculpture and architecture are studied as individual works in relationship to the social and religious contexts. Issues concerning iconography and biography will also be a focus of this course.

Upon successful completion of this course, students should be able to:
• Analyze representative art of the Renaissance, Baroque, Rococo, Neo-Classic, Romantic, Realist, Impressionist, Post-Impressionist and Expressionist periods. The many “isms” of 20th Century Art as well as the art of the 21st Century Post-Modern Era will also be covered in this class.
• Explain the techniques used in painting, sculpture and architecture of the period.
• Define the technical terms associated with the description of art.
• Identify stylistic changes affected by geography, politics and religion.
• Interpret biographical data of the individual artists wherever possible.
• Visually identify stylistic differentiation of any work(s) from the above time periods.

Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

ART 112 History Non-Western Art
This course surveys the artistic styles of Asia including Buddhist and Hindu art from India, Java, China, Korea and Japan. Arts of the Islamic world, Africa, Oceania and of the Americas including Native American Indian art will also be covered in this course. Painting, sculpture and architecture are studied as individual works in relationship to the social, geographical and religious backgrounds. Issues concerning iconography will also be a focus of this course. The influences of these cultures upon post-modern and contemporary art will be covered as well.

Upon successful completion of this course, students should be able to:
• Analyze representative art of India, Java, China, Korea, Japan, Islam, Africa, Oceania and the Americas.
• Explain the techniques used in painting, sculpture and architecture of the period.
• Define the technical terms associated with the description of art.
• Identify stylistic changes affected by geography, politics and religion.
• Identify the integration of some of these multicultural styles in post/modern and contemporary art forms.
• Visually identify stylistic differentiation of any work(s) from the above cultures.

Prereq. ENG 050, REA 050 or pass test
3 Credits 3 Weekly Lecture Hours
ART 130 Drawing I
This course is an introductory level foundation course in drawing. A variety of media and subject matter including still life will be a focus in this course. Demonstration, discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Demonstrate ability to draw utilizing perceptual means incorporating the basic properties of line, value, scale, proportion, figure-ground relationship and texture.
• Demonstrate the ability to activate the concept of the picture plane.
• Produce cohesive composition.
• Diagram perspective.
• Create the illusion of three-dimensional forms and space on a two-dimensional plane.
• Integrate critical thinking skills through completed artworks and formal critiques.
Prerequisite: None
May be repeated with Dept approval
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

ART 140 Painting I
This is a foundation level studio course in acrylic painting with instruction of the use of brush and palette knife. Still life subject matter will be the predominant source of visual imagery in this course. Demonstration, discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Prepare the materials for the process of painting.
• Demonstrate knowledge and understanding of the 12-hue color wheel.
• Produce cohesive composition.
• Demonstrate the ability to analyze how light creates form with the interplay of hue, value and chroma.
• Create the illusion of three-dimensional forms and space on a two-dimensional plane.
• Integrate critical thinking skills through completed artworks and critiques.
Prereg. ART 130
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

ART 141 Painting II Special Studies
This course will continue to stress general foundation painting skills in the acrylic and or mixed media. Subject matter will expand from the still-life to more conceptual based integration of various imagery. Demonstration discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Prepare the materials for the process of painting
• Demonstrate knowledge and understanding of the 12-hue color wheel
• Demonstrate the ability to activate the concept of the picture plane using traditional and non-traditional methods.
• Produce cohesive composition.
• Demonstrate the ability to analyze how light creates form with the interplay of hue, value and chroma.
• Manipulate the illusion of three-dimensional forms and space.
• Integrate critical thinking skills through completed artworks and critiques.
Prereg. ART 140
3 Credits 3 Weekly Lecture Hours

ART 143 Life Drawing and Painting
This course will emphasize life drawing and painting from the nude and draped model considering both objective and non-objective responses. Drawing with a variety of wet and dry media will be stressed in the course with a progression into acrylic painting on canvas.
Demonstration, discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Demonstrate the ability to draw the human figure utilizing perceptual means incorporating bold, gestural and quick mark-making skills.
• Demonstrate the ability to draw and paint the human figure utilizing perceptual means within a sustained pose incorporating the basic properties of line, value, scale and proportion, figure-ground relationship, texture and color.
• Demonstrate the ability to draw and paint the human figure incorporating basic rules of anatomy and art historical connections.
• Demonstrate the ability to activate the concept of the picture plane.
• Produce cohesive composition.
• Integrate critical thinking skills through completed artworks and formal critiques.
Prereg. ART 140
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

ART 145 Watercolor Painting
This course is an introduction to the basic tools and techniques of the watercolor painter. Emphasis is placed upon transparent watercolor within the Western tradition in still life, landscape, figurative and non-objective subject matter. Demonstration, discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Prepare the materials for the process of painting.
• Demonstrate knowledge and understanding of the 12-hue color wheel.
• Produce cohesive composition.
• Demonstrate the ability to activate the concept of the picture plane.
• Apply the wash, glazing, variegated wash, wet into wet, lifting, scraping, resist, drops and splatter, and dry brush techniques within a watercolor painting.
• Integrate critical thinking skills through complete artworks and formal critiques.
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

ART 160 Black and White Photography I
This course is designed to introduce students to the basics of picture taking and picture making. Topics include use of 35mm camera and lens, film processing, printing and photochemistry. Two-hour photolabs will provide practical darkroom experience.
Upon successful completion of this course, students should be able to:
• Identify and apply camera handling and cleaning techniques.
• Define and describe characteristics of black and white films and print papers.
• Calculate correct photographic exposures under a variety of lighting conditions.
• Describe and apply basic principles of photographic composition.
• Apply principles governing use of contrast filters.
• Describe and apply the technical and aesthetic criteria by which photographics are evaluated.
• Prepare a portfolio of black and white enlargement prints that exhibit effective focus, depth of field, contrast, cropping and display.
Need 35mm camera with adjustable settings
3 Credits 3 Weekly Lecture Hours

ART 161 Black and White Photography II
This course is a continuation of Black and White Photography I. Students learn more about the art of photography by exploring advanced approaches to composition, lighting and printing. Using photochemistry and setting up a home darkroom are among the topics presented.
Upon successful completion of the course, students should be able to:
• Use a light meter and gray card to calculate scene brightness ratios.
• Adjust film-speed ratings to compensate for camera or lighting exposure factors.
• Prepare commonly used photochemicals and describe their contents.
• Print “problem” negatives by altering local and overall density and contrast in the print.
• Adjust film development times to compensate for lighting conditions.
• Produce a portfolio of fully toned black and white prints that exhibit strong technical and aesthetic values.
Prereg. ART 160 or instructor’s permission
3 Credits 3 Weekly Lecture Hours

ART 162 Black and White Photography III
This is a lab-intensive course for students with one year of previous course work in photography. The use of photography as an expressive tool is approached by study and application of advanced methods of working with camera and processing film and prints with specialized photochemistry. Student learn to select print papers that enhance image quality. The limits of the 35mm negative format are explored.
Upon successful completion of this course, students should be able to:
• Previsualize subject matter for black and white photographs.
• Determine personal film speed.
• Adjust film processing to compensate for scene brightness.
• Produce their own gray scales and meter cards.
• Control the tonal ranges in prints from negatives made under a variety of lighting conditions.
• Prepare a portfolio of exhibition quality, archivally matted prints.
Prereg. ART 161 or equiv.
3 Credits 3 Weekly Lecture Hours

ART 166 Black and White Digital Negative
This course is a continuation of Black and White Photography, which incorporates the use of digital darkroom techniques. Students will learn the art of conventional printing using enlarged digital negatives. Students will have the opportunity to learn the advanced changes offered to them through the use of digital photography, bridging the technological gap between traditional methods and rapidly changing digital methods in photography. The course is not intended to abandon traditional methods of photography, but to incorporate the technology. This course will not involve the use of digital cameras. The course will use computers to enlarge black and white negatives for contact printing.
Upon successful completion of the course, the student should be able to:
• Integrate knowledge of conventional analog into digital photography techniques.
• Monitor calibration for digital negative production.
• Apply the various methods of scanning for digital negative resolution.
• Practice with the digital negatives to enhance images for fine printing (dodging, burning, sharpening, masking, and contrast controls).
• Use storage and transfer media for file compression.
• Use a service bureau for output production of enlarged negatives for printing.
• Produce a portfolio of prints incorporating the use of digital negatives.
• Use computer software for image enhancement.

Prereq. ART 161 and GRA 209. Must have 35mm camera

3 Credits  3 Weekly Lecture Hours

ART 167  Digital (SLR) Photography I Special Studies
This course is an exploration into the art of SLR digital photography. It will be approached from both a technical and an aesthetic viewpoint. Students will have the opportunity to learn about the advanced changes offered to them through the use of digital photography. The computer has changed the way that conventional photography is now being produced. This course will enable students to effectively and efficiently use and understand a digital camera design for high quality image making. Emphasis will be placed upon developing sufficient skills for the student to become self-reliant in the following:

Upon successful completion of this course, students should be able to:
• Proper handling and operation of the Digital SLR Camera.
• Calculating exposures under different lighting conditions.
• Understanding the technical differences among various lenses.
• Understanding the use and operations of the white balance and histogram functions.
• Understanding and using depth of field and motion creatively.
• Applying the elements of composition and subject lighting.
• Describing the technical and artistic merits by which photographs are evaluated.
• Preparing a portfolio of prints which exhibit technical competence and artistic merit.
• Using Photoshop and other software for image enhancement.

Prerequisite: Students are required to provide a 35mm Digital SLR camera and lens with adjustable shutter and aperture with lens and memory card. The camera must be a 8 megapixels or higher.

Students are required to provide their own printing paper, CDs, Jump Drives, and Portable Hard drives. Students may need an extra battery for your camera.

The College provides all other lab equipment, supplies and use of a modern photo and digital labs.

3 Credits  2 Weekly Lecture Hours  2 Weekly Laboratory Hours

ART 169  Medium and Large Format Photography
This studio and field course is an introduction to techniques, including use of medium- and large-format cameras. The course teaches practical, hands-on approaches to the design and production of high-quality photographs. The use of studio lighting and cameras is provided. Assignments include portfolio, photographing glassware, silver and industrial products, architecture and macro photography. Emphasis is on studio rather than darkroom experience, though students will develop and contact print their negatives.

Upon successful completion of this course, students should be able to:
• Arrange and light objects using tent lighting and studio light tables.
• Use basic tilt and swing movements to render correctly perspective and depth of field.
• Define, describe and apply principles of commercial studio photography.
• Apply large-format camera work to representative commercial studio subject matter.

3 Credits  2 Weekly Lecture Hours  2 Weekly Laboratory Hours

ART 175  Color Photography and the Digital Printing Workflow
This course explores the art of color digital photographic printing. It will incorporate the use of traditional color slide film, negative film and digital cameras to produce color digital prints using digital darkroom techniques and digital workflow procedures. Students will learn how to correctly expose for digital cameras, color slide film and negative film and how to balance color using color correction filters while in the field. The use of color as a design element in photography and the fine art of digital color printing will be emphasized.

Digital photography with computer enhancement has changed the way that conventional color photography is being produced. Students will have the opportunity to learn advanced techniques offered to them using digital photography software and printing to state-of-the-art Epson printers.

Upon successful completion of this course, students should be able to:
• Explain the difference between Conventional Analog Photography and Digital Photography.
• Calibrate monitors for Digital Image Production.
• Comprehend the importance of scanning slides and negative film for higher resolution and post digital production processes.
• Enhance images for fine art color printing.
• Utilize the techniques of dodging, burning, sharpening, masking and contrasts controls.
• Control contrast, enhanced light and make simple color corrections within a 16-bit workflow.
• Use Adobe Photoshop Software and other software products for image enhancements.
• Use the above-mentioned techniques to produce a final portfolio of prints.

Prerequisites: Black and White Photography II, (ART 161). Introduction to Photoshop, or permission from the instructor. Students are required to have access to a 35mm camera with adjustable settings and are required to provide their own film, or a DSLR of at least 10 Megapixels. Printing paper, CDs, Jump Drives, and Portable Hard Drives. The College provides all other lab equipment, supplies and use of a modern photo lab and digital labs.

3 Credits  2 Weekly Lecture Hours  2 Weekly Laboratory Hours

ART 177  Digital (SLR) Photography II Special Studies
This course is a continuation of Digital SLR Photography I. Students will learn about approaches to digital photography by exploring advanced techniques in editing by using Adobe Lightroom 2. This will be accomplished through image enhancement by understanding the components of lighting, exposure, composition, and printing.

Upon successful completion of this course, students should be able to:
• Choose the proper digital hardware and software for setting up a personal workstation for home use.
• Develop and follow a workflow through the use of Adobe Lightroom 2and editing software.
• Understand the differences in printing media and printing profiles to be applied for final output.
• The ability to transfer edited files in different media formats.
• Prepare images for web-based presentation.
• Apply the elements of composition and subject lighting.
• Describe the technical and artistic merits by which photographs are evaluated.
• Produce a final portfolio of prints, and digital media that exhibit strong technical and aesthetic values.

3 Credits  2 Weekly Lecture Hours  2 Weekly Laboratory Hours

ART 203  History of Modern Art
This course surveys the artistic styles from early modernist ideas in the 19th century and Post-Expressionism to the 21st century. Painting, sculpture, architecture, photography, and the numerous new media in art will be studied as individual works in relation to their cultural backgrounds. Issues of iconography, biography and other new methodologies will also be a focus of this course.

Upon successful completion of this course, students should be able to:
• Analyze representative art of Post-Expressionism, Art Nouveau, Expressionism, cubism, Dadaism, surrealism, constructivism, Abstract Expressionism, Pop Art, Minimalism, Neo Realism, Regionalism, Post-Minimalism, Post Modernism, Neo-Expressionism, Neo-Conceptualism and most recent 21st century artworks.
• Explain the techniques used in painting, sculpture, architecture, photography, and other media of the period.
• Define the technical terms associated with the description of art.
• Identify stylistic changes affected by geography, politics, religion, gender, psyche and world events.
• Interpret biographical data of the individual artists whenever possible.
• Visually identify stylistic differences of any work (s) from the above time periods.
• Apply research skills.

Prereq. ENG 100 and ART 111

3 Credits  3 Weekly Lecture Hours

ART 205  Portfolio Preparation
This course is intended for the aspiring fine art major who needs to prepare a portfolio for entry into a four year program. Each student will be assessed on an individual basis at the beginning of the course. Following this assessment the student will be mentored on an individual and group basis in order to prepare a portfolio displaying a breadth of media, subject matter, design approaches and concept. Course work will include individual and group critiques.

Upon successful completion of this course, students should be able to:
• Produce, select, critique and refine a body of work that represents a breadth of media, subject matter, design approaches and concept.
• Demonstrate the ability to activate the concept of the picture plane.
• Demonstrate the ability work from direct observation incorporating the basic properties of line, value, foreground relationship, textures and color.
• Produce original works of art display cohesive composition.
• Create a logical and coherent body of work incorporating a high level of craftsmanship and professionalism indicative to the discipline.
• Integrate critical thinking skills through completed artworks and formal critiques.

Prereq. ART 145 and GRA 123

3 Credits  2 Weekly Lecture Hours  2 Weekly Laboratory Hours
AUT 101 Automotive Electricity and Electronics
This course is designed to prepare the student to work in the field of electricity and electronics as it relates to the modern day automobile. The course covers concepts in basic electricity, electrical terms, electrical circuits, and electronic systems protection. The student will be introduced to various types of batteries such as deep cycle batteries and hybrid batteries, their design, maintenance, size, selection, factors affecting the battery's life, safety procedures, testing, charging, and jump-starting. Emphasis will be placed on the ignition system, its design, components, control circuits, testing, disassembly and assembly. The course is also designed to provide the student with a basic understanding of present and future developments in sophisticated automotive electronics. In addition, indicator systems, pollution control systems and other modern automotive accessory systems will be addressed.
 Upon successful completion of this course, students should be able to:
• Perform electronic pollution controls testing, service and repair requirements. Identify basic electronic circuits used in the modern automobile.
• Identify system defects and troubleshooting procedures.
• Utilize various techniques to adjust electronic ignition systems.
• Recognize electronic braking systems.
• Test, service, and repair various systems according to requirements.
• Identify indicators and gauges.
• Repair power operated cruise control. Install warning, security, and sound systems.
• Identify electronic controlled trip computers, and digital indicator systems. Troubleshoot warning, and warning indicators.
Prereq. AUT 100
4 Credits
2 Weekly Lecture Hours
4 Weekly Laboratory Hours

AUT 102 Automotive Engines
This course is designed to provide the student with the fundamental theory, construction, inspection, measurement, performance, and identification of the automobile's engine. Integrating theory and practical application in the lab is stressed throughout the course. The course covers topics such as preparing the engine for removal, lifting, disassembly, assembly, and inspection, as well as identifying, diagnosing, and evaluating engine parts. The student will gain skill in analyzing defects and the proper process to administer specific maintenance requirements. In addition, the student will be exposed to concepts in cylinder block reconditioning, crankshaft inspection and measurements, piston rings inspection, renewal, and installation.
 Upon successful completion of this course, students should be able to:
• Prepare engines for removal.
• Disassemble, inspect, and clean engine parts. Install bearing, pistons, piston rings, and crankshaft.
• Assemble the cylinder head.
• Remove the camshaft.
• Install timing components, gears chain, and belts.
• Inspect and service oil pumps.
• Inspect aluminum cylinder heads; combustion chamber, and intake exhaust valves.
• Follow valves reconditioning guide for valve seats, and valve stem seals.
• Adjust hydraulic and manual valve clearance.
• Lubricate and test cooling system.
• Inspect air induction system and exhaust system components.
• Service turbochargers and superchargers.
• Utilize torque wrench and its components.
• Thread and repair gaskets and their sealing properties.
• Use adhesives, sealant and other sealing materials.
• Reassemble engine and install engine in the vehicle.
• Perform crankshaft inspection measurements.
Prereq. AUT 100
4 Credits
2 Weekly Lecture Hours
4 Weekly Laboratory Hours

AUT 103 Brake Systems
This course is designed to introduce students to the principles of hydraulic brake systems and their components. The course will emphasize how to analyze and repair domestic and foreign brake systems to include shoe, disc, hydraulic, vacuum and air brake systems. Instruction will include principles of hydraulic brake systems, its components, hydraulic system safety switches and valves, master cylinder operation, as well as inspection, machining, fitting, and adjustments of brake systems. Measurements required for brakes, rotors, brake lining, and brake-bleeding procedures will be addressed. Mathematical calculation requirements and the use of digital readout units will be covered. In addition, diagnostic testing of disc brake components and functions, two and four wheel equipped disc brakes, general caliper inspection and service, rotor inspection and service, various antilock brake systems, ABS components and systems, automatic traction control and stability will be thoroughly presented.
 Upon successful completion of this course, students should be able to:
• Identify hydraulic brake systems.
• Repair brake booster and brake systems.
• Perform inspection, measurement and machining procedures.
• Diagnose, service and repair antilock brake systems and automated traction control.
• Service and repair four-wheel disc brake systems.
• Identify principles of hydraulic brake systems and components.
• Identify drum and disc brake assemblies.
• Diagnose and service brake drum and rotor components.
• Perform rotor inspection service and measurements.
• Diagnose and repair antilock brake systems for two wheel and four-wheel units.
Prereq. AUT 100
4 Credits
2 Weekly Lecture Hours
4 Weekly Laboratory Hours

AUT 114 Steering and Suspension
This course is designed as an introduction to tire descriptions, wheels, tire repairs, measurements, wheel run out, tires and wheels service, and wheel bearings. The course provides the student with methods of analyzing defects and the necessary preventive or corrective maintenance requirements. Tire wear patterns and remedies will be thoroughly covered. Emphasis will be placed on McPherson Shutter Systems, independent suspension systems, general front suspension inspection, and repairs. Topics such as electronically controlled suspension, manual steering systems, power steering systems, electrically controlled power steering systems, and steering system diagnosis will be covered. Visual inspection, four-wheel steering systems, alignment geometry, pre-alignment inspection, wheel alignment equipment, and alignment machines will also be presented.
 Upon successful completion of this course, students should be able to:
• Identify tire descriptions and usage.
• Perform service on tires and wheels, wheel bearings, front and rear from tapered to roller.
• Identify tire wear patterns and remedies.
• Repair frames, suspension system components, and McPherson Shutter Systems.
• Perform computer programming.
• Identify engine operation and performance, vacuums, and electronic devices.
• Operate manual and automatic systems.

Preq. AUT 100

4 Credits 2 Weekly Lecture Hours 4 Weekly Laboratory Hours

AUG 115 Fuel I and II

This course introduces the student to gasoline and diesel fuels with emphasis on fuel delivery, performance, pumps, and fuel lines in major domestic and foreign automotive fuel systems. The course includes carburetor design, basic carburetor circuits, and various types of carburetors. It also covers fuel injection systems, fuel lines, and fuel pumps, detailed inspection processes, and fuel tanks. The course also includes a complete diagnostic troubleshooting process, and an overall factory adjustment procedure of all major carburetor and fuel injection systems.

Upon successful completion of this course, students should be able to:
• Demonstrate safety in handling fuels.
• Evaluate uses of alternative fuels.
• Identify fuel delivery systems for gasoline and diesel engines.
• Determine alcohol and/or water levels in fuel tests.
• Identify fuel systems pressure, relief, and fuel filters. Identify the sources of technical data for automotive fuel systems.
• Discuss direct fuel injection systems for passenger cars.
• Operate and service hydraulic and mechanically controlled fuel injection systems. Explain the operation/service of electronically controlled fuel injection systems. Determine methods to analyze detected.
• Identify the fuel injection systems defects.
• Diagnose carburetor circuits and electronic control.
• Service carburetors and their related components.
• Evaluate basic carburetor designs, basic carburetor circuits, types of carburetors, updraft, side draft, and downdraft.
• Identify manifold vacuum, ported vacuum, venturi vacuum and their relationship to fuel injection systems.

Preq. AUT 100

2 Credits 1 Weekly Lecture Hours 2 Weekly Laboratory Hours

AUG 121 Engine Performance

This course is designed to provide the student with theory, design, construction, inspection, and service of the automotive engine. The purpose of the course is to review engine operation and performance, the creation of vacuum during engine operation, comparison of engine vacuum to low voltages use with vehicle engine management computer. Concepts such as computer programming, diagnosing, and troubleshooting internal circuit boards will be presented. The purpose and operation of critical sensors in fuel economy, emission control and electronic spark timing will also be presented. Catalytic converters, their purpose in controlling exhaust gas emission and the use of two or more O2 sensors will also be covered. Case studies of the vehicle engine, spark and fuel malfunctions, the use of scan tools, AC and DC test instruments, and dynamometer operation to simulate on-road conditions will be explored. Moreover, the use of OBD (On-Board Diagnostics) to determine malfunctions within the overall engine fuel and electronic management parameters will also be reviewed. Hands on skills to determine malfunctions in the operation of the modern vehicle in real life scenarios will be practiced.

Upon successful completion of this course, students should be able to:
• Identify engine operation and performance, vacuums, and electronic devices.
• Perform computer programming.
• Process malfunction retrieval of diagnostic trouble codes.
• Test sensors and activators performance.
• Define the relationship of fuel management to electronic engine control.
• Utilize scan tools.
• Repair emission control and electronic spark timing.
• Utilize exhaust dynamometer operation to simulate on-road conditions.
• Recognize internal circuits malfunctions.
• Identify results using two or more O2 sensors.
• Define operation of exhaust analyzers and dynamometers.
• Solve case studies describing malfunctions of engine parts.
• Apply AC and DC test instruments.
• Define OBD.
• Determine malfunctions within the overall engine fuel and electronic management parameters.

Preq. AUT 100

3 Credits 1 Weekly Lecture Hours 4 Weekly Laboratory Hours

AUG 123 Power Train Controls

This course is designed to expose the student to the design, service, and repair of automotive computer power train controls in automotive transmissions. Shifting, transfer case shifting, four-wheel drive and all-wheel drive shifting as well as shift feel diagnostics, and linkage adjustments will be covered. Emphasis will be placed on diagnostic and troubleshooting malfunctions and diagnostic and troubleshooting electronically controlled transmission/transaxles. Hands-on experience will be gained by utilizing electronic meters to retrieve malfunction trouble codes from the vehicle’s computer. Factory/aftermarket scanner tools will be utilized to determine or retrieve malfunctions trouble codes within the transmission/transaxle units.

Upon successful completion of this course, students should be able to:
• Prepare a list of electronically controlled unit cases.
• Diagnose and troubleshoot electronically controlled units.
• Demonstrate electronically controlled 4-wheel drive and all-wheel drive units. Service electronically controlled transfer case units.
• Troubleshoot the unit’s malfunctions.
• Utilize factory/aftermarket scanner tools to retrieve malfunction trouble codes. Disassemble, repair and replace electronic sensors.
• Locate oil pressure controlled switches.
• Reassemble electronic sensors and test for proper operation.

Preq. AUT 100

2 Credits 1 Weekly Lecture Hours 2 Weekly Laboratory Hours

AUG 150 Air Conditioning

This course is designed to provide the student with theory and skill in the design, operation, diagnostic, repair, and service procedures of the automotive heating and air conditioning combinations, individual controls, and refrigerants used in air conditioning systems. Manual and automatic operations of systems, basic and advanced control systems, and computer controlled air conditioning systems will be discussed. In addition, temperature controls systems, refrigerant control systems, proper maintenance procedures, and recommendations will also be addressed. Topics such as electrical, electronic diagnosis, troubleshooting, retrofitting R-12 systems to R-134A, and utilizing proper antifreeze protection will also be covered.

Upon successful completion of this course, students should be able to:
• Demonstrate safety and caution with refrigerants.
• Obtain EPA (Environmental Protection Agency) certification.
• Handle approved refrigerants.
• Diagnose heating and air conditioning system failures.
• Diagnose and repair electric and electronic systems.
• Discharge, evacuate, and repair various systems.
• Repair and change various systems.
• Drain, flush and refill cooling systems.
• Operate combustion and individual controls.
• Identify refrigerants to be used in A/C systems.
• Apply basic and advanced control systems.
• Recommend maintenance procedures.

Preq. AUT 100

2 Credits 1 Weekly Lecture Hours 2 Weekly Laboratory Hours

AUG 151 Ignition Systems

This course is designed to provide the student with a foundation in theory and skill in the field of ignition systems. Basic, primary and secondary circuits, ignition timing, spark timing systems, and the components and operation of the ignition system will be discussed. Visual inspection of components, wiring, and no-start diagnosis and general ignition system testing as well as the scope and effects of incorrect ignition timing will be included. Theory and practical application in the laboratory will be stressed.

Upon successful completion of this course, students should be able to:
• Define the purpose of the ignition system.
• Demonstrate safety, caution and proper use of tools.
• Install high voltage secondary wiring.
• Diagnose and troubleshoot primary and secondary ignition systems.
• Troubleshoot distributor equipped and direct spark ignition systems.
• Diagnose primary and secondary distributor service ignition control systems.
• Diagnose and repair no start problems.
• Adjust ignition timing on engines.

Preq. AUT 101

2 Credits 1 Weekly Lecture Hours 2 Weekly Laboratory Hours

AUG 152 Computer and Emissions Systems

This course is designed to provide the student with theory and skill in the design, repair, service, and testing procedures of emission systems, and derivability problems. Electronic service precautions, computer outputs, primary sensors, monitoring capabilities, OBD (On-Board Diagnostics) systems and terms will be covered thoroughly. The use of various types of computers in diagnostic systems, such as retrieving trouble codes, diagnosing computer voltage supply, and ground wires will be presented. The student will also be prepared to test input sensors, actuator sensors, variable resistor type sensors, generate sensors, and test various computer circuits in the modern day automobile. The legislative history of emission controls, pollutants, evaporative emission control systems, PVC emission control system, exhaust emission control system, EGR (Exhaust, Gas, and Recirculation) systems, catalytic converter systems, troubleshooting and diagnosing emission systems, and engine management by computer systems will be thoroughly covered.

Upon successful completion of this course, students should be able to:
• Explain computer operation, circuits, and design. Define OBD (On-Board Diagnostics) terms.
• Utilize testing tools to retrieve malfunction codes from the computer.
• Identify the importance of emission controls and emission control procedures.
• Interpret electronic service precautions.
• Perform basic diagnosis.
• Explain computer outputs and actuators.
• Retrieve trouble codes from various types of computers.
• Test input sensors and actuator sensors.
• Explain exhaust emission control system.
• Define EGR (Exhaust, Gas and Recirculation) systems
• Troubleshoot and diagnose emission systems.
• Maintain control of emission and engine management by the computer.

Prereq: AUT 100

3 Credits  2 Weekly Lecture Hours  2 Weekly Laboratory Hours

AUT 153  Automotive Manual Transmission/Transaxle and Chassis

This course is designed to provide the student with knowledge and skill in manual transmission/transaxle and clutch units, used to move vehicles from a stop to full speed. It includes internal unit designs; power flows, gearing theory, internal nomenclature, overdrive, and gear ratio explanation. Disassembly, assembly, and removal of the transmission/transaxle, as well as inspection of the internal components will be covered. Service and replacement of CV joints and front wheel drive will also be included. Conventional and limited slip differentials provide the student with knowledge and skill in the operation and function of the clutch.

Upon successful completion of this course, students should be able to:
• Demonstrate safety in disassembly, removal, and assembly of units in the vehicle.
• Inspect components in a vehicle. Install units in the vehicle.
• Explain gear ratio.
• Apply gearing theory.
• Inspect and measure internal components.
• Replace internal components.
• Demonstrate how varied gear combinations move a vehicle to highway speeds. Diagnose gearing and clutch problems during unit's operation.
• Differentiate between manual transmissions and manual transaxles.
• Identify clutch components and determine replacement.

Prereq: AUT 101

3 Credits  1 Weekly Lecture Hours  4 Weekly Laboratory Hours

AUT 200  Automotive Automatic Transmission/Transaxle

This course is designed to provide the student with theory and skill in the design, construction, inspection, repair, and diagnostic testing of the automatic transmission/transaxle. The student will be prepared to perform diagnostic procedures during the evaluation of the component's operation to determine if minor or major repairs are required to bring the automatic transmission/transaxle units back to manufacturer's specifications. In addition, processes to disassemble, measure, inspect, and re-assemble automatic transmission/transaxle units correctly will be stressed. Electronic controls, hydraulic systems, locking and unlocking hubs, and operational modes will be discussed. Emphasis will be placed on servicing four-wheel drive and all-wheel drive systems; transmission clutches, automatic transmission/transaxle maintenance, oil, and filter change procedures will also be covered. Hands-on procedures will be stressed throughout the course.

Upon successful completion of this course, students should be able to:
• Demonstrate safety in disassembly, removal, and assembly of units in the vehicle.
• Inspect components in a vehicle. Install units in the vehicle.
• Explain gear ratio.
• Apply gearing theory.
• Inspect and measure internal components.
• Replace internal components.
• Demonstrate how varied gear combinations move a vehicle to highway speeds. Diagnose gearing and clutch problems during unit's operation.
• Differentiate between manual transmissions and manual transaxles.
• Identify clutch components and determine replacement.

Prereq: AUT 151

2 Credits  1 Weekly Lecture Hours  2 Weekly Laboratory Hours

AUT 201  Automotive Chassis and Security Systems

This course is designed to expose the student to the chassis and many security systems used on today's modern vehicles. This course will prepare the student to diagnose, wire, troubleshoot, remove, and install components in a safe and efficient manner. In addition, topics such as air bag restraint systems; front, side, and roof units restraint systems; conventional seat belts and roofline slider belts will be addressed. Moreover, radio and speaker installations, automatic vehicle leveling systems, and proper wiring for anti-theft device installation systems will also be covered. Upon successful completion of this course, students should be able to:
• Test chassis and security systems.
• Define air bag restraint systems.
• Remove and service air bag systems.
• Prevent deployment of air bag systems.
• Demonstrate precaution during the disconnecting of air bags for servicing.
• Repair restraint systems using conventional seat belts and roofline slider belts. Inspect belt webbing and anchor locations.
• Install belt webbing and anchor locations.
• Recognize delayed lighting and running lamps.
• Install and repair automatic locks, security and anti-theft devices.
• Perform appropriate wiring for anti-theft device installation.
• Install radios, CD tape players, and speakers systems.
• Replace and repair electronic heat grids on rear windows.
• Utilize automatic vehicle leveling systems.
• Utilize the wiring diagram and computer.
• Install automatic built in security systems.
• Adjust chassis.
• Troubleshoot chassis operation.

Prereq: AUT 100

4 Credits  2 Weekly Lecture Hours  4 Weekly Laboratory Hours

BIO 110  Introductory Biology I

Introductory Biology I is designed for majors in biology, natural science, and related fields. This course introduces students to the general principles of biology, emphasizing cell structure and function, molecular biology, genetics, and evolution. Students are expected to develop skills in utilizing the scientific method as a tool for problem solving.

Upon successful completion of this course, students should be able to:
• Utilize the scientific method to solve problems.
• Describe the chemical structure of biological molecules.
• Relate molecular structure to biological function.
• Describe prokaryotic and eukaryotic cell structure.
• Relate cellular structure to cell function.
• Explain the processes by which living systems convert solar energy to usable chemical energy.
• Identify the role of genetic material in transmission of traits from generation to generation.
• Relate variability in the transmission of genetic material to biological evolution.
• Critique current theories on the origin of life on Earth.
• Access, interpret, and evaluate peer-reviewed primary scientific literature.
• Demonstrate an ability to utilize modern biology laboratory skills.
• Demonstrate an ability to apply biological concepts to one's life.

Prereq: MAT 040 and REA 050

4 Credits  3 Weekly Lecture Hours  2 Weekly Laboratory Hours

BIO 111  Introductory Biology II

Introductory Biology II is designed for majors in biology, natural science, and related fields. This course focuses on the structure, function, and diversity of organisms with an emphasis on their evolutionary and ecological relationships. Upon successful completion of this course, students should be able to:
• Relate taxonomic classification to biological evolution.
• Describe patterns and processes of embryological development in animals.
• Relate structure to function in animal organ systems.
• Relate reproductive patterns to classification of the major phyla of plants.
• Characterize the features of selected organisms in the Kingdom Fungi.
• Demonstrate the polyphyletic nature of the Kingdom Protista.
• Characterize the evolutionary and ecological significance of bacteria.
• Discuss the impact of viruses on organisms.
• Interpret the ecological significance of organisms within various taxa.
• Access, interpret, and evaluate peer-reviewed primary scientific literature.
• Demonstrate an ability to utilize modern biology laboratory skills.

Prereq: BIO 110

4 Credits  3 Weekly Lecture Hours  2 Weekly Laboratory Hours

BIO 115  Field Ecology

Field Ecology is designed primarily for majors in biology, natural science, and related fields, yet is open to students of all majors. This course introduces students to the general principles of field ecology pertaining to terrestrial, aquatic,
and marine habitats. Emphasis will be placed upon regional conservation issues, biodiversity concepts, plant and animal interactions and adaptations, effects of human disturbance on native flora and fauna, and field research techniques. Students are expected to develop and apply skills in field research and in utilizing the scientific method. There are additional fees associated with this course that will vary depending upon the region being studied.

Upon successful completion of this course, students should be able to:

• Apply the scientific method to test hypotheses
• Develop and apply skills used to identify, survey, and study plants and animals in a field setting
• Describe local, regional, and global trends in biodiversity
• Develop an appreciation of the ecological and economic value of biologically diverse habitats
• Develop an appreciation of the value of diverse perspectives in a multicultural

BIO 118 Human Physiology

The study of the functions of the human body. Emphasis is placed on the interaction of the organ systems in the maintenance of body homeostasis. The lab will center around experiments on living vertebrates, with emphasis on the cat. Dissection is required.

Upon successful completion of this course, students should be able to:

• Describe the anatomical parts of the body as a whole.
• Discuss the structure of the body using the systematic approach: integumentary, skeletal, muscular, nervous, cardiovascular, respiratory, digestive, urinary, reproductive and endocrine systems.

Prereq. MAT 040, REA 050
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

BIO 150 Human Anatomy and Physiology I

The first course in a two-semester sequence that covers the basic structure and function of the human body using a systems approach. Major topics covered include biological chemistry, cell biology, histology, integumentary system, skeletal system, muscular system, and nervous system. Laboratory work includes dissection, microscopy, models, and experimental demonstration of concepts covered in class. Dissection of preserved animal specimens is required. This course is designed primarily for students majoring in nursing or allied health fields. BIO 110 (Introductory Biology I) is suggested, but not required, before enrolling in Human Anatomy & Physiology I.

Upon successful completion of this course, students should be able to:

• Demonstrate the correct usage of basic anatomical terminology
• Describe how the body uses feedback systems to maintain homeostasis
• Apply basic chemical concepts to the study of human physiology
• Compare the major organic molecules found in the human body and describe their functions
• Relate cell ultrastructure to the various functions performed by the cell
• Compare the major tissues found in the human body and relate their structure and location to specific functions
• Describe how the structure of the skin contributes to its functions
• Describe the organization and function of the skeletal system
• Categorize joints according to their structure and function
• Analyze the ultrastructure of skeletal muscle and explain the mechanism of muscle contraction
• Demonstrate an understanding of the physiology of nerve impulse generation and propagation
• Analyze the structure and function of the spinal cord and spinal nerves
• Analyze the structure and function of the brain and cranial nerves
• Demonstrate an understanding of how the autonomic nervous system functions to maintain homeostasis
• Relate the structure and location of the various sensory receptors to the perception of specific sensations
• Demonstrate an ability to perform modern laboratory skills, including dissection and microscopy
• Collect and analyze experimental data, formulate appropriate conclusions, and compile lab reports
• Apply concepts learned in this course to one's personal health

Prereq. ENG 050, REA 050, MAT 060
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

BIO 151 Human Anatomy and Physiology II

The second course in a two-semester sequence that covers the basic structure and function of the human body using a systems approach. Major topics covered include the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems along with immunity, metabolism, and fluid, electrolyte, and acid-base homeostasis. Laboratory work involves dissection, microscopy, models, and experimental demonstration of concepts covered during class. Dissection of preserved animal specimens is required. This course is designed primarily for students majoring in nursing and allied health fields.

Upon successful completion of this course, students should be able to:

• Evaluate the role of hormones in regulating body functions
• Categorize the components of the blood and describe their functions
• Describe how major metabolic pathways are used by the body
• Relate the structure of the blood vessels to the hemodynamics of blood flow
• Examine the structure and function of the lymphatic system
• Analyze how the immune system functions to defend the body against disease
• Demonstrate an understanding of respiratory anatomy and physiology
• Demonstrate an understanding of digestive anatomy and physiology
• Analyze how major metabolic pathways are used by the body

Prereq. BIO 110 or BIO 111
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

BIO 200 General Zoology

A survey of the major invertebrate and vertebrate phyla including evolution within, biological contributions, basic structure, physiology and behavior of representatives of each subgroup.

This course is designed for science majors who, upon successful completion, should be able to:

• Prepare independently a research project in which the problem, background, procedure, apparatus and evaluation are thoroughly outlined.
• Trace the development of life on the earth from the primitive atmosphere components through the initial heterotrophs.
• Describe the taxa, behavior, biological contributions, characteristic systems and evolution in the unicellular invertebrates.
• Describe the taxa, behavior, biological contributions, characteristic systems and evolution in the class Insecta.
• In addition, explain why these are considered the most successful form of animal life.
• Describe the characteristics, evolution and taxonomical subdivisions of the Chordates.
• Explain the characteristics, taxonomy and organ systems of several vertebrate classes.
• Describe the evolution within the vertebrates using fossil history, comparative behavior and anatomy.
• Work independently in the laboratory by performing routine dissections and behavioral studies.
• Develop a lab notebook.
• Develop an extensive scientific vocabulary.

Prereq. BIO 100 or BIO 110
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

BIO 210 General Botany

A study of the major plant divisions with an emphasis on basic structure, function, reproduction patterns, biological contributions, development and evolutionary relationships within each subgroup. Emphasis will be placed on the seed plants. Dissection is required. This course is designed for science majors.
Upon successful completion, should be able to:
• Discuss the plant body and its modifications in the angiosperms.
• Discuss the anatomical structure, origin, location and function of plant tissues in the angiosperms.
• Explain the patterns of vegetative reproduction found in the angiosperms.
• Describe flower, fruit and seed production in the angiosperms.
• Discuss the classification, characteristic life cycles and biological contributions in the thallophytes with chlorophyll (chlorophyta, cyanophyta, euglenophyta, pyrrophyta, phaeophyta).
• Describe the characteristics, taxonomy, alteration of generations and evolution in the mosses, club mosses, horsetails and ferns.
• Describe the classification, characteristic life cycles and biological contribution in the gymnosperms.
• Work independently in the laboratory by performing observations, drawings and dissections.

Prereq. BIO 100 or BIO 111
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

BUS 103 Business
This course introduces business and non-business majors to the business world. Emphasis is on terminology used in business. Students explore careers in business along with the events and economic conditions that affect business.

Upon successful completion of this course, students should be able to:
• Define e-commerce and related terminology.
• Discuss the global impact of e-commerce.
• Give examples of what businesses can gain from a presence on the Internet.
• Identify how the Internet and e-commerce are affecting the structure and activities of organizations.
• Identify different personal and business Internet Information Services on line.
• Discuss ethical, political and legal issues concerning proper conduct on the Internet.

Prereq. BIO 100 and CHE 110 or BIO 150 and BIO 151
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

BUS 104 Business
This course introduces business and non-business majors to the business world. Emphasis is on terminology used in business. Students explore careers in business along with the events and economic conditions that affect business.

Upon successful completion of this course, students should be able to:
• Define e-commerce and related terminology.
• Discuss the global impact of e-commerce.
• Give examples of what businesses can gain from a presence on the Internet.
• Identify how the Internet and e-commerce are affecting the structure and activities of organizations.
• Identify different personal and business Internet Information Services on line.
• Discuss ethical, political and legal issues concerning proper conduct on the Internet.

Prereq. BIO 100 and CHE 110 or BIO 150 and BIO 151
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

BUS 105 International Business
This course details practical terminology, concepts, associations, relationships and ideas that are unique to business operations in the international sector. Its focus is on general consideration for businesses operating simultaneously in many different and constantly changing environments.

Upon successful completion of the course, students should be able to:
• Discuss the historical growth of international trade.
• Distinguish between the major international trade theories.
• Determine what types of trading assistance international organizations offer.
• Explain the rationale for the international monetary system and how it affects exports/imports.
• Understand the basic legal business environment that relates to small business.

Prerequisites: Satisfactory score on the English and Reading placement test or successful completion of Developmental English (ENG 150) and Developmental Reading and Study Skills (REA 050).
3 Credits 3 Weekly Lecture Hours

BUS 106 Entrepreneurship Seminar
The main objective of this course is to provide the student with an understanding of the problems and challenges facing an entrepreneur in the process of creating a business plan and seeking investors. Students are required to write a business plan and formally present their business plan. To facilitate the writing of the business plan, the plan will be discussed and completed in sections. Multiple iterations of the business plan will be submitted for feedback and refinement.

Prerequisites: Satisfactory score on the English and Reading placement test or successful completion of Developmental English (ENG 150) and Developmental Reading and Study Skills (REA 050).
3 Credits 3 Weekly Lecture Hours
Upon successful completion of this course, students should be able to:

- Write a complete Business Plan
- Prepare and deliver an oral presentation on the Business Plan
- Develop a strategic financial plan to obtain financing

Prereq. BUS 105
1 Credit

**BUS 110**  **Sales and Sales Supervision**

This course provides a middle-management approach to sales as a function of the marketing process. Emphasis in the course is on theory and basic techniques of selling. Students are required to prepare and execute a formal sales presentation.

Upon successful completion of this course, students should be able to:

- Discuss the psychology of the salesperson, his/her needs, problems and accomplishments.
- Develop interpersonal skills for successful lifetime use.
- Employ techniques that enable a salesperson to sell a product or service.
- Analyze the pressures of attempting to influence the buying habits of another person through personal interaction.
- Construct a written sales proposal based on customer needs.
- Apply various modes of communication to build effective business relationships.
- Analyze the legal, social and ethical implications of persuasive forms of business communications.
- Manage time and territory constraints.
- Prepare and execute a formal sales presentation.

Prereq. ENG 100 and DPIR 100
3 Credits 3 Weekly Lecture Hours

**BUS 130**  **Business Communication**

This course focuses on the special needs of written and oral communication skills in the world of business. Emphasis is on the writing of memos, letters, proposals, keeping a calendar, and researching business topics via the computer. The preparation of oral reports and presentation skills is also stressed.

Upon successful completion of this course, students should be able to:

- Identify the fundamentals of communication theory and their relationship to business communication.
- Apply the principles of effective communication to business situations that use memos, letters, proposals, and reports.
- Organize business messages that are logical, complete, concise, grammatically correct, and correct centered.
- Electronically create business letters that respond to an inquiry, place an order, solicit a request, sell a product, adjust a billing, seek credit, respond to a claim, make collection on an account, and prepare a resume and cover letter.
- Research business topics using the Internet and other sources and prepare a report. Prepare and deliver an oral presentation on a business topic. Employ effective listening skills. Conduct an effective business meeting centering on a prepared agenda.

Prereq. ENG 100 and DPIR 100
3 Credits 3 Weekly Lecture Hours

**BUS 149**  **Small Business Management**

This course is designed to introduce students to the many facets of the small business from an entrepreneurial point of view. Small business managers and owners need a variety of exposure covering the entire span of operations and management. General concepts are reviewed to give students an introductory background in the world of small business. When the course is concluded, students should have the basic knowledge to make judgments as to further study necessary for their particular small business endeavor.

Upon successful completion of this course, students should also be able to:

- Use management skills in the areas of personnel, merchandising, budgeting and control.
- Describe possible solutions to problems in the areas of strategic planning and management.
- Assess the values and limitations of various financial opportunities.
- Discuss the internal and external operations of a small business.
- Conduct an audit and account for cash through managerial financial statements.
- Analyze the implications of distribution systems for the small business.
- Apply personnel management strategies.
- Develop an awareness of the role of small business management in our social system.

Prereq. ENG 100 and DPIR 100 or pass test
3 Credits 3 Weekly Lecture Hours

**BUS 211**  **Supervision**

This course will provide an overview of the external political, cultural and economic forces operating on the practice of management in the multinational firm. In addition, the internal management will be examined to provide an understanding of both the functional areas and the overall management.

Upon successful completion of this course, students should be able to:

- Investigate special problems confronting international managers.
- Discuss the differences among international managers.
- Explain how sociocultural differences affect business.
- Determine the major legal and financial problems that might affect business.
- Analyze the available labor pool.
- Examine planning and organizational global functions.
- Discuss the unique international control and staffing considerations.

Co-Requisite: ENG 100 - English Composition I
Prereq. BUS 100 Coreq. ENG 100
3 Credits 3 Weekly Lecture Hours

**BUS 212**  **Introduction to Sport Management**

This course explores the sport industry environment and introduces business and management concepts as they apply to this specific setting. Students are exposed to the planning, organizing, leading, and controlling strategies and skills with special emphasis on how they are applied in an organization operating within the demanding context of modern sports industry.

Upon successful completion of this course, a student should be able to:

- Discuss the management skills functions and approaches applicable to a sports industry.
- Describe the sports industry environment from global ethical and social perspectives.
- Apply the decision making process within the sports industry including definition goal setting evaluating alternatives and implementation.
- Convert the strategic planning process as it applies to the sports industry.
- Articulate the key strategies utilized in event, facility, time and scheduling management.
- Describe organizational design and function as it applies to the development of an innovative, flexible and diverse internal culture.
- Enumerate the legal, social, collaborative and motivational aspects of human resource management within a sports environment.
- Describe the application of management control tools to promote quality, productivity and integrity within a sport organization.

Prereq. ENG 100 and DPIR 100, or pass test
3 Credits 3 Weekly Lecture Hours

**BUS 213**  **Leadership**

This course presents both theoretical and practical aspects of leadership functions needed to develop an effective and productive workforce. The major thrust of the course is student growth through reflection. Exercises include practical aspects of leadership in an organization.

Upon successful completion of this course, students should be able to:

- Differentiate between leadership and management.
- Demonstrate why leadership is important to companies and countries.
- Identify important leadership characteristics and behaviors.
- Explain the difference between an effective and an ineffective leader.
- Discuss how a leader attains goals through followers.
- Compare and contrast power and influence and why they are important.
- Analyze the leadership process in a framework of exercises and self-reflection.

**LICENSES & CERTIFICATIONS**
• Articulate and examine leadership skills, values and behaviors.
• Illustrate how teams help leaders attain their goals.
• Describe how leaders are able to influence and motivate team members.

3 Credits 3 Weekly Lecture Hours

BUS 214 Organizational Behavior
An introduction to the study of human behavior in organizations, the purpose of this course is to increase the student's understanding and awareness of individual, interpersonal, group and organizational activities and events, as well as to increase the ability to explain and manage such events. The course emphasizes principles, concepts and theories applicable to organizations of any type. Such knowledge will help students develop skills to manage successfully and influence today's workers, teams and organizations.

Upon successful completion of this course, the student should be able to:
• Explain the organizational and social environments within which managers manage.
• Analyze the role managers play in contributing to organizational success.
• Demonstrate organizational and interpersonal skills needed by managers to function successfully.
• Explain the factors that determine an individual's personality and his or her relationship to job performance.
• Explain how perception affects the decision-making process.
• Describe the relationship among individuals values, attitudes, behavior, and job satisfaction.
• Apply the major theories of motivation.
• Identify the key factors in explaining group behavior.
• Explain the reasons for the growing popularity of teams in organizations.
• Explain the importance of leadership and communication skills to effective management of people.
• Discuss the effects of power and politics on organizational behavior.
• Define the common characteristics making up an organization culture.
• Discuss the forces that affect change in organizations and the ways of managing individual and organizational resistance to change.
• Analyze the role managers play in contributing to organizational success.

Prereq. DPR 100, ENG 050, REA 050, MAT 040 or pass test

3 Credits 3 Weekly Lecture Hours

BUS 215 Human Resource Management
This course presents an in-depth study of the principles of human resource management. The course presents both the theoretical and practical aspects of the broad human resource functions which managers must understand in order to develop an effective and productive workforce. Computer simulations and exercises are used to introduce students to the practical aspects of human resource management.

Upon successful completion of this course, students should be able to:
• Explain the increasingly important role of human resource management in today's modern organization.
• Describe the major personnel functions.
• Identify the explain the provisions of the major laws and regulations that influence human resource management.
• Explain Equal Employment Opportunity and Affirmative Action programs.
• Describe the interaction between business planning and human resource planning.
• Define corporate culture and describe the factors that interact to affect corporate culture.
• Explain the various types of corporate culture.
• Explain the collective bargaining process and describe a sound union-management relations program.
• Describe an effective performance evaluation system and identify the important dimensions of performance that should be evaluated.
• List the major theories of motivation and explain the central components of each theory.
• Explain the importance of training and development in maintaining and developing an effective workforce.
• Define the three types of compensation and explain how they tie to the organizational strategy.
• Define a benefit and explain why benefits are important to both employees and employers.
• Use a Human Resource Information System (HRIS) to perform selected human resource activities.

Prereq. DPR 100

3 Credits 3 Weekly Lecture Hours

BUS 216 Training & Development
This course introduces students to the importance of training and development in today's organizations. As more organizations restructure and initiate strategic changes, training and development becomes more important. Training and Development programs range from improving employee productivity to leadership development. The course focuses on training and development as an integrated strategic system comprised of the assessment of training needs, design and implementation of the training program, and evaluation. The legal and ethical considerations of training will also be discussed.

Upon successful completion of this course, students should be able to:
• Describe the components of an open system training and development model.
• Explain the roles and expectations of training and development to an organization.
• Describe the benefits of using a human resource development perspective in strategy development.
• Identify the major factors in employee performance and their relationship to training.
• Describe the steps in a training needs assessment.
• Apply the principles derived from learning theory to design a training session and program.
• Describe the methods and the cost/benefits of evaluating training programs.
• Discuss the advantages and disadvantages of the different training methods.
• Describe the importance of management development programs and how they are influenced by changes in organizational strategy.

Prereq. ENG 050, REA 050, MAT 040 or pass test

3 Credits 3 Weekly Lecture Hours

BUS 218 Labor Relations
For organizations to be successful today, the relationship between managers and employees must be handled effectively. Whether or not employees are represented by unions, issues such as employee health and safety, working conditions and security must be addressed. This course will discuss the development and application of policies and procedures in addressing employee rights issues. The course will focus on union/management relations in the union organizing, collective bargaining and grievance-arbitration processes. The course provides students with an understanding of the legal, ethical and practical issues in union/management relations.

Upon successful completion of this course, students should be able to:
• Explain employment-at-will and identify three exceptions to it.
• Discuss employee rights issues associated with access to employee records, free speech, workplace monitoring, investigations and drug testing.
• Discuss the stages in the unionization process.
• Apply the appropriate laws related to union/management relations.
• Identify labor relations strategies and how they affect operational and tactical labor relations.
• Describe the three major phases of union/management relations: union organizing, collective bargaining and contract administration.
• Discuss the rights, responsibilities and ethics of union/management relations.
• Apply conflict resolution practices and techniques in a work environment.
• Apply negotiation skills in work environment.

Prereq. ENG 050, REA 050, MAT 040 or pass test

3 Credits 3 Weekly Lecture Hours

BUS 220 Elementary Statistics
This is an introductory course in statistics which will provide the basics needed to solve simple problems as well as provide the necessary foundation for inference and estimation.

Upon successful completion of this course, students should be able to:
• Define and calculate the mean, median, mode, range, variance and standard deviation for ungrouped and grouped data.
• Determine whether events are statistically independent, dependent or mutually exclusive.
• Calculate probabilities using the addition and multiplication rules.
• Calculate probabilities using the binomial, Poisson and normal probability distributions in practical problems.
• Calculate binomial probabilities using the Poisson and normal probability distributions as approximations.
• Demonstrate an understanding of the concepts of a sampling distribution and a sampling error.
• Construct and interpret confidence interval estimates for the population mean and/or population proportion.
• Formulate and test hypotheses about a population mean and/or a population proportion.

Prereq. MAT 100

3 Credits 3 Weekly Lecture Hours
BUS 225   Professional Development
This course is designed to promote critical thinking with regard to career preparation, career management and career development.
Upon successful completion of this course, students should be able to:
• Demonstrate a professional image.
• Identify and apply effective job-seeking skills.
• Identify characteristics associated with job success.
• Demonstrate effective business communication skills.
• Increase personal, professional, social and organizational effectiveness through improved communication.
• Develop goal-setting skills.
• Identify the characteristics of self-esteem.
• Identify the characteristics of leadership.
• Define work ethics.
• Discuss time, money and stress-management techniques.
• Define personal values.
• Demonstrate the ability to analyze and solve problems.
• Discuss courtesy and common-sense skills.
• Identify professional development skills.
• Demonstrate effective human-relations skills.
• Evaluate the implications of organizational dynamics.
• Apply correct guidelines for effective business travel.
3 Credits 3 Weekly Lecture Hours

BUS 230   Principles of Marketing
This is a survey course designed to introduce students to the total marketing process. The nature and scope of marketing as it relates to managing profitable business in today’s society will be examined. Study will include the various factors affecting this process such as product, price, promotion, place (distribution), the environment, international marketing, and consumerism.
Upon successful completion of this course, students should be able to:
• Describe the nature and scope of marketing.
• Identify the opportunities and constraints that exist in the firm’s external environment.
• Determine the marketing manager’s role in developing strategies and tactics aimed at achieving company goals.
• Analyze meaningful market segments and select target markets.
• Explore the value of gathering information for problem solving and decision making.
• Apply consumer-behavior principles to effective marketing activities.
• Develop and offer products (or services), including product-related factors, to provide customer satisfaction.
• Demonstrate an awareness of international marketing and social responsibility.
Prereq. BUS 100
3 Credits 3 Weekly Lecture Hours

BUS 231   Principles of Advertising
This course is a detailed study of media usage for mass selling, Philosophy and psychology of radio, television, newspaper and other mass communications are covered. Practical applications of current advertising techniques will be developed.
Upon satisfactory completion of the course, students will be able to:
• Demonstrate a knowledge of the theories of mass communications and their effect on the public.
• Use verbal and written motivational means in reaching people.
• Possess a practical understanding of operational hands-on advertising and of advertising program planning.
• Choose appropriate media and develop advertising strategies.
• Have a working knowledge of budgeting for advertising in various size enterprises.
• Develop promotional plans that coordinate with overall business activity.
• Show knowledge of evaluation of advertising effectiveness.
Prereq. BUS 100
3 Credits 3 Weekly Lecture Hours

BUS 232   Principles of Finance
This course provides an examination of the goals of financial management within an analytical framework. Emphasis is given to techniques and methods useful to manage the money supply by a business organization. Financial analysis and planning is explored. Techniques for managing working capital in a risk-return context are considered. Capital budgeting and related valuation concepts and long-term financing methods are included.
Upon successful completion of this course, students should be able to:
• State the goals and functions of financial management.
• Use financial ratios to evaluate business success.
• Prepare projected statements for financial planning.
• Demonstrate how operating and financial leverage enables management to maximize profits.
• Determine optimum operating levels of working capital.
• Prepare calculations involving the time value of money to assist in making investment decisions.
• Measure financial risk through quantitative methods.
• Describe how financial managers decide to use debt and equity instruments for long-term financing.
Prereq. ACC 112
3 Credits 3 Weekly Lecture Hours

BUS 233   Financial Planning
This course introduces business and non-business majors to the world of financial planning. Emphasis is placed on mastery of the terminology, concepts and calculations used in the business world. The course looks at investment decisions from both the view of a financial institution and the view of an investor. The course focuses on both short-term and long-term financial planning.
Upon successful completion of this course, students should be able to:
• Prepare a cash budget and determine cash flow position.
• Calculate gross pay, payroll deductions and net pay.
• Analyze the impact of taxes on asset/investment decisions.
• Maintain and reconcile savings and checking accounts.
• Analyze, lease or buy decisions for an automobile, housing or any other investment decision.
• Describe the concepts of managing credit.
• Identify common business terminology and calculate the premiums for insuring individuals for life, homeowners, health and automobile coverages.
• Analyze, develop and monitor an investment portfolio that includes but is not limited to stocks, bonds, real estate, mutual funds and futures.
• Develop a strategic financial plan for an individual’s projected lifetime.
• Distinguish between investment opportunities for growth and income and explain how risk affects these concepts.
• Use present and future value tables.
• Discuss the principles of retirement and estate planning including concepts of wills, trusts and annuities.
• Discuss the tax implications of retirement and estate planning.
Prereq. ENG 050, REA 050, MAT 040
3 Credits 3 Weekly Lecture Hours

BUS 234   Electronic Marketing
This course is designed to introduce students to the principles and concepts of electronic marketing.
Upon successful completion of this course, students should be able to:
• Describe the importance of e-marketing resources in business.
• Apply traditional marketing processes to e-commerce.
• Develop a marketing plan for an e-commerce business entity or organization.
• Analyze market segments and select target markets to be explored.
• Capture target market data, analyze data and recommend appropriate adjustments to the marketing mix to maximize revenues and profits.
• Describe opportunities available for business-to-business commerce, business-to-customer commerce, and customer-to-customer commerce.
• Identify the implications of e-marketing on the global economy.
• Design and manage a web site for an on-line marketer.
• Describe how a decision support system, enterprise resource system and an e-business solutions technology can provide guidance to management in making operational, tactical and strategic decisions.
Prereq. BUS 100
3 Credits 3 Weekly Lecture Hours

BUS 235   Supply Chain Management
This course focuses on the development, design and management of the supply chain.
Upon successful completion of this course, the student should be able to:
• Explain why an effective and efficient supply chain is critical to the success of a business.
• Configure a logistics network.
• Prepare accurate supply and demand forecasts for all members of a supply chain.
• Compare the advantages and disadvantages of centralized versus decentralized control.
• Describe the tactics and strategies employed to deal with international supply chain issues.
• Calculate the economic order size for all members of a supply chain.
• Analyze and quantify the effect of value-added services.
• Utilize supply chain information technology.
• Explain how to integrate suppliers and customers into new product development.
Prereq. BUS 100
3 Credits 3 Weekly Lecture Hours

BUS 236   Principles of Sports Marketing
This course is designed to expose the student to fundamental concepts of marketing, emphasizing how these concepts are applied to the domestic sports industry as well as, peripherally, the international market. The course will focus on the unique aspects of sport, such as its particular product and life cycle profiles, the sport consumer and the various marketing tools and strategies that can be utilized to successfully bring the product to market, specifically the classic marketing mix, as well as targeting, segmentation, program implementation and control.
Upon successful completion of this course, the student should be able to:
• Articulate the role of strategic marketing with emphasis on the sports industry. Describe the unique aspects of the sports industry.
• Discuss the specific profiles and behaviors of the sports consumer.
• Articulate marketing appropriate techniques to create and position the sport product. Demonstrate a firm grasp of the ethics of sports marketing.
• Utilize effective communication techniques central to the marketing process.
CHE 100  Chemical Science and the Environment

This course begins with a survey of some of the principles of chemistry. These principles are then applied to practical topics such as air and water pollution, global warming, resource and energy options. This course is intended for non-science majors interested in chemistry and how it relates to the environment.

Upon successful completion of this course, students should be able to:
- Demonstrate a number of non-mathematical chemical principles such as simplified atomic structure, chemical bonding and naming of compounds
- Describe the major types, causes, and possible solutions of air and water pollution
- Discuss the future problems and solutions of the world's energy problems
- Relate the basic chemical principles to other environmental and personal chemistry related issues

Prereq. MAT 060, ENG 060, MAT 060

4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

CHE 105  Technical Chemistry

This course is intended primarily for students who are in the various technology programs. It is designed to provide an understanding of basic chemical principles that will allow the students to take their places as scientifically literate members of society and to work in their various occupations (such as plant operators in the petrochemical, food, or pharmaceutical industries, as well as public safety officers who must respond to incidents involving toxic and hazardous materials). The course will not involve detailed chemical calculations or advanced theoretical topics.

Upon successful completion of this course, students should be able to:
- Explain how the elements are used to form compounds
- Discuss the fields of Organic & Inorganic Chemistry
- Describe the chemistry of fire and explain the process of extinguishment
- Describe the petroleum industry and explain the petroleum refining process
- Discuss the causes of air and water pollution and explain their consequences
- Select the means to assess the safety of chemicals and describe the value of MSDS, the Merck Index, and other references

Prereq. MAT 060

3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

CHE 106  Introduction to Chemistry

Credits for this course will count as a science elective at DCCC for all curricula except the natural science curriculum. This course may not be transferable for science majors. This course is designed for but not limited to students who wish to take General Chemistry but have inadequate backgrounds.

Upon successful completion of this course, students should be able to:
- Use scientific notation to multiply and divide
- Use an electronic calculator to multiply and divide
- Measure the length, mass, volume and temperature of materials using the metric system
- Recall common conversion factors in the metric system
- Use dimensional analysis
- Use significant figures
- Draw graphs according to established criteria
- Demonstrate laboratory skills by naming laboratory equipment and distinguishing among types of substances

Prereq. ENG 050 and REA 050 or pass test

3 Credits 3 Weekly Lecture Hours

CHE 110  General Chemistry I

This course is designed for students majoring in science or engineering fields.

Upon successful completion of this course, students should be able to:
- Use the metric system as a tool for performing measurements of length, area, mass, volume, energy and amounts of substances in terms of moles
- Identify and classify substances with regard to type, state, purity and modes of change
- Usefully apply the knowledge of the periodicity of the elements toward the description of chemical bonding
- Solve mathematical problems related to chemical change and the mole concept
- Explain and illustrate, by example, a variety of conceptual models used in studying the structure and behavior of atoms, molecules, solids, liquids and gases
- Demonstrate approved techniques in gravimetric and volumetric methods in the laboratory

Prereq. MAT 100 or CHE 106

4 Credits 3 Weekly Lecture Hours 3 Weekly Laboratory Hours

CHE 111  General Chemistry II

This course is a continuation of General Chemistry I.

Upon satisfactory completion of this course, students should be able to:
- Prepare solutions with specific concentration values
- Understand and apply the colligative properties of solutions toward the solution of practical problems
- Evaluate and apply modern theories of acids and bases, especially the concept of pH
- Apply the principles of kinetics and equilibrium toward the productive handling of systems of weak electrolytes
- Understand and use the principles of oxidation reduction, electrochemistry and thermodynamics in explaining why chemical reactions occur and what benefits or consequences may result
- Apply the principles of nuclear chemistry to the solution of problems relevant to contemporary society

Prereq. CHE 110

4 Credits 3 Weekly Lecture Hours 3 Weekly Laboratory Hours

CHE 200  Organic Chemistry I

An integrated study of carbon compounds with emphasis on structure, stereochemistry, reactions and synthesis. Laboratory work will emphasize record keeping, separation, purification and identification using chromatography.

Upon successful completion of this course, students should be able to:
- Describe the chemical bonding in organic compounds
- Analyze the thermodynamic and kinetic relationship in organic reactions
- Describe the physical properties, stereochemistry, preparation, reactions and multistep synthesis of hydrocarbons
- Demonstrate laboratory procedures for record keeping, separation, purification and identification using chromatography

Prereq. CHE 111

5 Credits 4 Weekly Lecture Hours 3 Weekly Laboratory Hours
CHE 201  Organic Chemistry II
The study of organic compounds containing oxygen and nitrogen. The structure, stereochemistry, reactions, and multistep synthesis of organic nitrogen and oxygen will be studied. Syntheses and instrumental analysis (IR and NMR) will be emphasized in the laboratory.
Upon successful completion of this course, students should be able to:
• Analyze organic compounds using spectroscopy.
• Explain elimination and substitution reactions.
• Describe the physical properties, stereochemistry, preparation, reactions and multistep synthesis of organic oxygen and nitrogen compounds.
• Describe the general characteristics of carbohydrates, lipids and proteins.
• Prepare compounds using complex syntheses.
• Demonstrate a knowledge of scientific references and an ability to search the scientific literature.
PreReq. CHE 200
5 Credits 3 Weekly Lecture Hours 3 Weekly Laboratory Hours

(COMM) Communication Studies

COMM 104  Introduction to Mass Communication
This course introduces students to both the print and electronic media systems. Students will review the history of the mass media and explore career options in this field. They will also study the techniques of media analysis and consider the effects of the various media on society.
Upon successful completion of this course, students should be able to:
• Explain how the mass media have developed
• Analyze the impact of print and electronic media upon society
• Explain media forms.
• Understand the conceptual differences between the media and their practical applications.
• Assess the various career opportunities available in the mass communications field.
PreReq. ENG 050 and REA 050 or pass test
3 Credits 3 Weekly Lecture Hours

COMM 105  Small Group Communication
A study of the techniques involved in effective group communication including: discussion, decision making, problem solving and resolving conflict in groups. Students learn theories of group dynamics and the nature of norms, goals, roles and leadership styles in small, task oriented groups. The class is a laboratory where students actively participate in structured group experiences requiring preparation and evaluation.
Upon successful completion of this course, the student should be able to:
• Identify the dynamics of effective group communication needed to maintain a small group
• Identify and manage interpersonal conflicts in group settings
• Recognize and identify differences in culture and communication styles as they apply to small group communication
• Distinguish between defensive and supportive group communication climates
• Recognize each of the following as they apply to small group communication: role, individual goal, group goal, norm, group cohesion, and feedback
• Explain the principles necessary to lead a discussion or group meeting
• Participate productively in small group contexts
PreReq. COMM 100 or consent of instructor
3 Credits 3 Weekly Lecture Hours

COMM 111  Public Speaking
This course enables students to speak before and in large and small groups. The course seeks to introduce students to the problems involved in providing information and persuading others. Organizational and research skills are stressed. Students can expect to present a minimum of five speeches.
Upon successful completion of this course, students should be able to:
• Define the concepts of “listener/audience needs.”
• Speak extemporaneously (with no or a minimum of notes), using effective voice, language and bodily action.
• Locate appropriate materials (library, research, newspaper, journal, periodical, nonprint media, interviews) for the public-speaking occasion.
• Organize ideas, opinions, facts, data requests into a message that will promote the desired response from the listeners.
• Present a variety of public messages: information, persuasion, entertainment/after dinner/solicitation/inquiry/stimulation and analysis.
• Evaluate as a listener speech messages; being able to distinguish between an effective and noneffective message.
PreReq. ENG 050 and REA 050 or pass test
3 Credits 3 Weekly Lecture Hours

COMM 200  Argumentation and Debate
To survive, compete, thrive and find success in an often-turbulent modern world requires a sound working knowledge of the rules of persuasion and the ability to use the tools of verbal reasoning, logic and evidence to support one’s position.
Upon successful completion of this course, students should be able to:
• Demonstrate that he/she can effect change through the use of persuasive skill.
• Debate both the affirmative and the negative positions of a current controversial proposition.
• Prepare a “brief” showing the supportable positions on any contemporary social, political or economic question.
• Use the principles of library research and nonprint media to support their persuasive position.
PreReq. COMM 111 or permission of instructor
3 Credits 3 Weekly Lecture Hours
**CPT 100 Introduction to Carpentry**

Classroom instruction includes the proper use of measuring tools, applying blueprint interpretation and using mathematical skills needed for carpentry applications. Lab instruction includes proper use of hand and power tools, layout procedures, building materials application and rough framing. A review of basic math and measurement is covered at the onset of the course.

Upon successful completion of this course, students should be able to:
- Make up various wood joints.
- Use hand and power tools safely.
- Select and apply different fasteners.
- Apply finishes to achieve desired appearance.
- Utilize shop tools safely.
- Read blueprints relevant to basic carpentry.

4 Credits  3 Weekly Lecture Hours  2 Weekly Laboratory Hours

**CPT 101 Concepts of Carpentry Design**

Emphasis of this course is on carpentry skill components including: layout procedure, applications of measurement tools, blueprint reading, building codes and regulations, and applied mathematical formulas vital to the carpentry trade.

Upon successful completion of this course, students should be able to:
- Demonstrate the layout of foundations.
- Perform rough framing projects.
- Install rough floors.
- Construct simple roof rafters.
- Construct basic stairways.
- Utilize carpentry blueprint-reading skills.
- Perform mathematical equations pertinent to the skills required.

Prep: CPT 100

4 Credits  3 Weekly Lecture Hours  2 Weekly Laboratory Hours

**CPT 150 Introduction to Cabinetmaking**

This course introduces basic cabinetmaking skills. Topics covered include material selection, layout, design, proper use and application of hand and power tools, and finishing techniques. Course includes the design and construction of various projects.

Upon successful completion of this course, students should be able to:
- Describe cabinet design considerations.
- Make basic sketches and layouts.
- Generate a Bill of Material for a project.
- Identify woods by sight.
- Discuss applications for woods.
- List applications for each wood species.
- Apply veneers.
- Affix plastic laminates.
- Select and apply different fasteners.
- Use hand and power tools safely.
- Make up various wood joints.
- Fabricate fixtures.
- Prepare a project for finishing.
- Apply finishes to wood.

2 Credits  1 Weekly Lecture Hours  2 Weekly Laboratory Hours

**CPT 151 Furniture Building**

This course presents the basic skills necessary to build furniture. Proper use of hand and power tools is covered. Wood joinery is covered along with different finishing techniques.

Upon successful completion of this course, students should be able to:
- Select wood for various applications.
- Make basic joints including mortise, tenon and dovetails.
- Demonstrate proper router applications.
- Perform proper clamping techniques.
- Apply finishes to achieve desired appearance.
- Utilize shop tools safely.
- Read blueprints relevant to basic carpentry.

3 Credits  3 Weekly Lecture Hours

**CPT 152 Home Remodeling/Additions**

Introduces basic principles of framing structures, insulation, paneling, ceramic tile for floors and walls, and basic carpentry skills. Topics covered include: stairs, roofing, basic plumbing and wiring, finishing work, skylights and windows and kitchens and bathrooms.

Upon successful completion of this course, students should be able to:
- Demonstrate proper applications of framing members including headers, beams, roof joists.
- Lay out a stairway.
- Apply ceramic tile with use of mastic or substrate.
- Explain the basic concepts involved of home wiring.
- Install a window into a new or existing opening.
- Solder 1/2" and 3/4" copper tubing.
- Construct a simple drainage branch using plastic pipe.

2 Credits  1 Weekly Lecture Hours  2 Weekly Laboratory Hours

**CPT 153 Advanced Furniture Building**

This course is designed for students who are ready to progress beyond The Basics of Furniture Building (CPT 151) course. It presents advanced techniques in wood bending using steam, laminate, freedom and coopering. The process of working with wood veneers and veneer inlays will be covered. Various methods in finishing and finishing materials will be emphasized.

Upon successful completion of this course, students should be able to:
- Select various types of wood for numerous application procedures
- Build, setup and operate a steaming device for bending wood
- Construct the appropriate form for bending procedures
- Use wood laminates for the purpose of bending
- Layout construction for coopering
- Apply various techniques for staining and finishing

2 Credits  1 Weekly Lecture Hours  2 Weekly Laboratory Hours

**CPT 154 Introduction to Doors and Windows - Residential**

This course is designed to provide the student with the fundamentals of various phases of door and window construction, installation, and finishing. Classroom instruction includes the proper use of measuring tools, blueprint reading, math skills, and arranging materials needed for finish carpentry applications. Lab instruction includes layout procedures, the proper use of hand and power tools to cut and shape wood, plastic and fiberglass. Identification of door and window hardware will also be presented. Tools such as chisels, planes, saws, drills, sandsers will be utilized.

Upon successful completion of this course, students should be able to:
- Select and apply different types of finishes for doors and windows.
- Select the proper window and door sizes based on rough openings and manufacturers specifications.
- Install windows on “New” house construction, replacement windows, and additional window placement.
- Select various types of window glazing, glazing materials, and installing glass.
- Discuss the identification and applications of interior and exterior door and window casings.
- Utilize shop tools safely.

2 Credits  1 Weekly Lecture Hours  2 Weekly Laboratory Hours

**CPT 155 Drywall and Interior Trim**

This course is designed to introduce the student to the field of interior trim carpentry. The course presents the basic phases of drywall construction, ceiling applications, and interior trim processes. Topics covered include layout procedures, proper use of tape, corner beads, and drywall joint compound. In addition, ceiling construction, suspended ceilings, and ceiling tile will be presented. The process of measuring proper applications of moldings, and molding patterns will be covered.

4 Credits  2 Weekly Lecture Hours  4 Weekly Laboratory Hours

**CPT 158 Masonry Construction**

This course is designed to introduce the student to the field of masonry construction. The course presents the basic phases of construction, including laying, cutting, and applying concrete and masonry materials. Topics covered include layout procedures, proper use of tools, and the process of measuring proper applications of masonry materials.

4 Credits  2 Weekly Lecture Hours  4 Weekly Laboratory Hours

**CPT 156 Introduction to Roofing and Siding**

This course provides an introduction to roofing and siding processes. The course is designed to provide instruction in the commonalities of theory and skills associated with the installation of roof systems and siding materials. Topics covered include: roof obstructions, flashings, chimneys, and wood siding.

Upon successful completion of this course, students should be able to:
- Define roofing and siding terms.
- Describe and apply roofing felt, organic and/or fiberglass asphalt shingles and roll roofing.
- Describe and apply aluminum and vinyl siding.
- Identify flash valleys, side walls, chimneys, and other roof obstructions.
- Cut and bend roll aluminum to fit exterior trim and soffits.
- Apply and cut fasten exterior insulation.
- Estimate needed roofing and siding materials.

4 Credits  2 Weekly Lecture Hours  4 Weekly Laboratory Hours

**CPT 159 Advanced Masonry Construction**

This course is designed to introduce the student to the field of advanced masonry construction. The course presents the basic phases of construction, including laying, cutting, and applying concrete and masonry materials. Topics covered include layout procedures, proper use of tools, and the process of measuring proper applications of masonry materials.

Upon successful completion of this course, students should be able to:
- Define roofing and siding terms.
- Describe and apply roofing felt, organic and/or fiberglass asphalt shingles and roll roofing.
- Describe and apply aluminum and vinyl siding.
- Identify flash valleys, side walls, chimneys, and other roof obstructions.
- Cut and bend roll aluminum to fit exterior trim and soffits.
- Apply and cut fasten exterior insulation.
- Estimate needed roofing and siding materials.

4 Credits  2 Weekly Lecture Hours  4 Weekly Laboratory Hours

**CPT 160 Introduction to Staircase & Balconies**

This introductory course is designed to provide the student with a concentrated instruction method in staircases and balconies. The student will learn basic concepts which includes, stairs and balcony types, layouts, construction and terminology. Design concepts, tools and methods, spiral staircases and balcony construction will be thoroughly presented. In addition, mathematical calculations will be used to determine proper tread rise and various carpentry measurements.

Upon successful completion of this course, students should be able to:
- Identify various types of staircases and balconies and their terminology.
- Perform mathematical calculations to determine proper tread rise and run of a given staircase.
- Layout and fabricate plain, square cut, mitered and housed stringers and stairs.
- Construct stairs.
- Construct and install platforms and landings.
- Fabricate and install staircase and railing support structures.
- Fabricate and install balcony skirts.
- Utilize existing building codes to comply with code enforcement regulations.

4 Credits  2 Weekly Lecture Hours  4 Weekly Laboratory Hours

**CPT 161 Introduction to Interior Trim, Walls and Ceilings**

This course is designed to introduce the student to the field of interior trim carpentry. The course presents the basic phases of drywall construction, ceiling applications, and interior trim processes. Topics covered include layout procedures, proper use of tape, corner beads, and drywall joint compound. In addition, ceiling construction, suspended ceilings, and ceiling tile will be presented. The process of measuring proper applications of moldings, and molding patterns will be covered.

4 Credits  2 Weekly Lecture Hours  4 Weekly Laboratory Hours
Upon successful completion of this course, students should be able to:

- Describe various types, sizes, and uses of drywall panels.
- Describe hardware, adhesives, and applications of drywall.
- Make simple and multi-story drywall applications to interior walls and ceilings.
- Reinforce and conceal joints with tape and compound.
- Identify standard and crown moldings and their applications.
- Apply ceiling and wall moldings.
- Apply interior door casings, baseboard, base cap and base shoe.
- Install window trim, including stools, aprons, jamb extensions, casings, and stop beads.
- Layout and install suspended ceilings.
- Layout and install ceiling tile.

4 Credits 2 Weekly Lecture Hours 4 Weekly Laboratory Hours

CPT 163 Introduction to Basic Floor Systems

This course introduces the student to the concepts of basic flooring systems. Topics such as material selection, layout, pattern design, construction techniques, and flooring applications will be presented. In addition, the design and construction applications of various floor systems and completion of assigned selected projects will be covered.

Upon successful completion of this course, students should be able to:

- Describe the types, sizes, and grades of hardwood flooring.
- Apply strip, plank, and parquet flooring.
- Estimate quantities of wood finish flooring required for various installations.
- Apply underlayment and resilient tile floor.
- Apply underlayment and ceramic tile floor.
- Apply special underlayment and pre-finished floor systems.
- Finish wood flooring.

3 Credits 3 Weekly Lecture Hours

CPT 200 Advanced Framing Design

This course provides instruction on advanced structural concepts. Topics covered include: identification of structural components, floor joists, ceiling joists, rafter, headers, window casings, door jambs and roof sheathing.

Upon successful completion of this course, students should be able to:

- Identify the structural components in construction.
- Construct partition framing.
- Install ceiling joists in a structure at the girder and beams.
- Complete roof and exterior finishes.
- Utilize measurement tools correctly and accurately.
- Understand blueprint symbols and nomenclature.

Prereq. CPT 101

4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

CPT 260 Advanced Roofing and Siding

This course is designed for the student wishing to take the advanced level course in roofing and siding. This level presents various demonstrations of grades of wood shingles, shakes and terra cotta tile. Siding applications, cedar shakes, T 111 siding, brick, stone and stucco will be presented. Practical application of theoretical material covered in class is stressed throughout this course.

Upon successful completion of this course, students should be able to:

- Define advanced roofing and siding terms
- Describe and apply wood shingles and shakes to roof underlayment.
- Flash hip-valley and ridge roofs according to specific application.
- Apply wood shingles and shakes to siding
- Apply T 111 siding

4 Credits 2 Weekly Lecture Hours 4 Weekly Laboratory Hours

DPR 100 Introduction to Information Technology

This course introduces students to computer concepts and applications. Students are introduced to computer hardware, software, and operating systems. Also covered are the Internet, application software, databases, networks, computer security, mobile devices, software programming, IT privacy issues, and future trends in technology.

Upon successful completion of this course, students should be able to:

- Describe the types of computers and their purposes
- Describe how the components of a computer system function (hardware and software)
- Use Operating System software
- Use productivity software such as Microsoft Office (Word, Excel, PowerPoint and Access)
- Describe the concept of computer programming
- Describe databases
- Describe the legal and privacy issues concerning information technology
- Use the internet for research
- Use technologies as an effective communicator tool, examples include IM, Wiki, Blog, E-Portfolio

Prereq. REA 050

3 Credits 3 Weekly Lecture Hours

DPR 105 Management Information Systems

This introductory course in managing information systems defines business processes, integrates these processes with computer technology, explains the flow of information in a business, and examines the use of information in business management. Business topics are integrated with information systems concepts. The course is designed for students using computer technology in a business environment. This course provides a real world process-oriented component to business education. Selected exercises using MS Office, MTS software, and business simulation games on the Internet are used in this course.

Upon successful completion of this course, the student will be able to:

- Explain what a business information system is and identify key components.
- Outline the phases and steps in the information system development process.
- Define business and computer technology terminology.
- Give examples of how business information systems can break time, geographic, cost, and structural barriers in business.
- Identify how business information systems are affecting the structure and activities of organizations.
- Diagram typical flows of information in business operations.
- Examine specific ethical principles of conduct and apply an ethical analysis to a difficult business information systems situation.
- Identify business software tools that complete word processing, prepare spreadsheets, perform research, design databases, and prepare presentations.
- Demonstrate a fundamental knowledge of how business processes and computer technology improve effectiveness of organizational goals.
- Explain how information systems can improve management decision-making effectiveness.

Prereq. DPR 100 or 108

3 Credits 3 Weekly Lecture Hours

DPR 107 Helpdesk Concepts

This course provides students with a practical introduction to Help Desk concepts. Topics covered include the different types of help desks and how they are measured by organizations; the roles and skills required to function in a Help Desk environment; and the processes and technologies commonly employed to ensure the Help Desk is operating efficiently and effectively.

Upon successful completion of this course, students should be able to:

- Discuss the components of a successful Help Desk.
- Discuss the emerging support center concepts.
- Distinguish between the different types of Help Desks, such as centralized, decentralized, internal, external.
- Use required business and technical skills.
- Discuss job responsibilities of Help Desk personnel.
- Discuss Help Desk processes and procedures.
- Apply the technological aspects of the Help Desk.
- Apply the informational aspects of the Help Desk.

Prereq. DPR 100

3 Credits 3 Weekly Lecture Hours

DPR 108 Introduction to Computer Science

This is an introductory course intended to prepare students for courses in computer programming. The purpose of the course is to teach students the fundamentals of designing, developing, and testing computer programs. The C++ computer language is used to allow students to explore computer programming. This course is required before any computer programming courses can be taken.

Upon successful completion of this course, the student should be able to:

- Implement the major steps in the design and development of a computer program.
- Navigate through the C++ editor, compiler, and runtime environment.
- Explain and use data, operations, functions, and datatypes.
- Apply the correct control and iterative structures to a program.
- Demonstrate proficiency in PC file creation and in a GUI operating system.

Prereq. ENG 050, REA 050 and MAT 060

3 Credits 3 Weekly Lecture Hours

DPR 111 Computer Applications

This is a comprehensive hands-on personal computer applications course specifically designed for students to develop an intermediate knowledge of word processing, spreadsheet software, database software and presentation software. Additional topics include an overview of the components of a microcomputer system; hardware and software; storage devices and media; interpretation of error messages, file management, file storage, and Internet research.

Upon successful completion of this course, students should be able to:

- Differentiate between hardware and software.
- Identify various storage devices and media.
- Manage files and folders.
- Navigate to information stored on the computer.
- Perform tasks using features common to integrated software programs.
- Demonstrate computer skills using application software on a personal computer.
- Use word processing software to create, edit and format documents.
- Apply intermediate word processing skills to solve application-type problems using word processing software.
- Design, create, modify, and format worksheets and workbooks using spreadsheet software.
- Design databases and create, edit and modify database objects.
• Design, create, enhance, organize, and view presentations using presentation software.
• Use the Internet to navigate the Web using URL and Hyperlinks, to create and delete bookmarks, to compose, view, send, receive, and print e-mail messages.
Prerequisite: Reading II (REA 050)
Prereq. REA 050
3 Credits 4 Weekly Lecture Hours

DPR 113 Database Management Systems
This course provides students with an introduction to database concepts, data models and Database Management System (DBMS) software. The relational data base model is examined. One or more of the common DBMS software is included as part of the hands-on activities associated with the course.
Upon successful completion of this course, students should be able to:
• Discuss general concepts of computer data base systems.
• Understand data models through an intuitive approach to data base design.
• Recognize the Standards for data base design and apply them to the data base design of a specified application.
• Identify the main features of a relational data base model.
• Design, develop and manipulate a rudimentary relational data base.
Prereq. DPR 100
4 Credits 3 Weekly Lecture Hours 1 Weekly Laboratory Hours

DPR 114 Microsoft Word
This course is designed to develop students' word processing skills on the microcomputer using Microsoft Word for Windows. Basic, intermediate and advanced features of MS Word are stressed.
Upon successful completion of this course, students should be able to:
• Create, save, retrieve and print documents.
• Identify word-shortcut commands and function keys using the WORD Keyboard Template.
• Identify the various parts of the Word screen.
• Edit documents by use of insert and deletes functions.
• Select and use character formatting features including all caps, bold, italic, underline, double underlining, and line spacing, indenting and changing the case of letters.
• Enhance business memoranda and letters by changing the alignment, indentes and line spacing of paragraphs as well as creating numbered and bulleted paragraphs.
• Manage documents by creating folders, copying, renaming, deleting and printing documents.
• Enhance the visual display of text in documents by changing the font.
• Apply formatting effects to text such as strikethrough, superscript, subscript, small caps and hidden text.
• Use writing tools by completing a spelling check on text in a document, improving the grammar of text in a document using the grammar checker, adding words to and deleting words from the AutoCorrect dialog box, displaying synonyms and antonyms for specific words using the Thesaurus and displaying information about a document such as the number of pages, words, characters, paragraphs and lines.
• Manipulate the length of lines in business documents, create a document more quickly with the date and AutoText features, and improve the visual appeal with drop caps and nonbreaking spaces.
• Manipulate tabs in documents with tab settings including left, right, center and decimal.
• Control printing features for simple business documents and print envelopes and mailing labels.
• Format and merge separate files to create a series of similar business documents such as personalized form letters, envelopes and labels.
3 Credits 3 Weekly Lecture Hours

DPR 115 Microsoft Excel
This hands-on course provides a comprehensive presentation of Microsoft Excel. The more advance features of Microsoft Excel are stressed.
Upon successful completion of this course, students should be able to:
• Develop Excel worksheets that include formulas and functions.
• Develop professional-looking worksheets using Excel.
• Create charts and graphs.
• Manage financial data using Excel.
• Create static and dynamic Web pages using Excel.
• Work with multiple worksheets and workbooks.
• Manipulate data with database functions, lookup function and templates.
• Enhance Excel worksheets with Visual Basic and Macros for applications.
• Demonstrate "What-If Analysis" using Excel.
• Import data into Excel worksheets from other Microsoft applications.
Prereq. or Coreq. DPR 100
3 Credits 3 Weekly Lecture Hours

DPR 116 Introduction to Online Research Strategies
This course is designed to teach students effective research skills using the internet. Students will learn effective research strategies for retrieving, evaluating and using information from internet web sites, internet-based subscription databases, and various Web 2.0 applications. The development of critical thinking skills for college level research assignments and lifelong learning will be stressed. Ethical and legal aspects regarding the use of information will be discussed.
Upon successful completion of this course, students should be able to:
• Distinguish free internet sites from fee-based internet subscription services.
• Use advanced features of internet search engines and fee-based internet subscription services.
• Evaluate web sites for reliability and relevancy.
• Choose the most effective resource and format for the specific information needed.
• Understand the legal and ethical issues regarding plagiarism and copyright.
• Compose a works cited list using MLA or APA format.
• Navigate services available through homepages of a public library and an academic library.
Coreq. DPR 100
3 Credits 3 Weekly Lecture Hours

DPR 141 UNIX Operating Systems
This hands-on course aims to familiarize students with the UNIX operating system. The course covers the installation, use, management and customization of UNIX in a PC environment. Topics include login, command line and graphical user interface, file permissions, file operations, shell and file system, scripting languages, and interactive elements to Web pages using scripting languages and an emphasis on PHP. Learn how to write and embed PHP into HTML. Design and relational database system using MySQL and connect to it using PHP. E-commerce issues such as user authentication, how to securely gather, transmit and store data will also be addressed.
Upon successful completion of this course, students should be able to:
• Describe scripting languages, their purpose and how to integrate them into HTML. Differentiate between web scripting technologies such as JavaScript, Perl/CGI, ASP and PHP.
• Discuss the advantages and disadvantages of using various scripting languages. Write scripts using string, numeric, Boolean variable types, expressions and arithmetic operators.
• Write user-defined functions.
• Define and use objects, properties, methods and events.
• Incorporate conditional and repetition structures into scripts.
• Test and debug scripts.
• Design and create a relational database using MySQL.
• Add, edit, delete and search records in a MySQL database from the web with PHP.
• Describe e-commerce security issues.
• Implement user authentication with PHP and MySQL.
• Implement secure transactions with PHP and MySQL.
Prereq. IMM 120, DPR 108
3 Credits 3 Weekly Lecture Hours

DPR 205 Introduction to Java Programming
This course teaches students how to create single user applications. Students learn the fundamentals of object-oriented programming by designing, coding and testing simple applications. The course is designed for students who have an understanding of programming methods and techniques using the Java programming language.
Upon successful completion of this course, the student should be able to:
• Explain the fundamentals of JAVA programming.
• Create and use functions in a JAVA program.
• Demonstrate use of JAVA class libraries.
• Explore applet class.
• Demonstrate use of methods and method overloading.
• Explain and use the function of inheritance, derived and abstract classes. Demonstrate use of object-oriented programming techniques.
Prereq. DPR 108
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

DPR 206 Programming for the Web
In this course Web developers learn to add dynamic content and interactive elements to Web pages using scripting languages with an emphasis on PHP. Learn how to write and embed PHP into HTML. Design and relational database system using MySQL and connect to it using PHP. E-commerce issues such as user authentication, how to securely gather, transmit and store data will also be addressed.
Upon successful completion of this course, students should be able to:
• Describe scripting languages, their purpose and how to integrate them into HTML. Differentiate between web scripting technologies such as JavaScript, Perl/CGI, ASP and PHP.
• Discuss the advantages and disadvantages of using various scripting languages. Write scripts using string, numeric, Boolean variable types, expressions and arithmetic operators.
• Write user-defined functions.
• Define and use objects, properties, methods and events.
• Incorporate conditional and repetition structures into scripts.
• Test and debug scripts.
• Design and create a relational database using MySQL.
• Add, edit, delete and search records in a MySQL database from the web with PHP.
• Describe e-commerce security issues.
• Implement user authentication with PHP and MySQL.
• Implement secure transactions with PHP and MySQL.
Prereq. IMM 120, DPR 108
3 Credits 3 Weekly Lecture Hours

DPR 207 Intro to Oracle:SQL
This course introduces students to Oracle as a data base management system. Emphasis is on using SQL to query and update data in a database, create reports, and to embed SQL commands in a programming language.
Upon successful completion of this course, the student should be able to:
• Discuss the conceptual and physical aspects of relational database architecture.
• Write and execute SQL statements.
• Use the SQL editor.
• Use single row and group functions.
• Create tables and views.
• Produce output using SQL *Plus.
• Control user access.
• Write small PL/SQL programs.

**Prereq. DPR 108** 4 Weekly Lecture Hours

**DPR 209 PERL/CGI Programming**
This course introduces students to the concepts, techniques and syntax needed to write, debug and implement effective Perl programs and CGI scripts. Perl is presented both in general programming terms and in its role as the language most frequently used to exchange data between web clients and servers.

Upon successful completion of this course, students should be able to:
• Identify how Perl handles programming concepts such as arithmetical, relational and logical operators.
• Characterize conditional and iterative structures.
• Use data types including scalars, arrays and hashes.
• Identify and characterize modularity and system variables.
• Analyze problems in order to design Perl programs solutions.
• Create, test, debug and execute Perl programs.
• Evaluate programs in order to be able to optimize their effectiveness and efficiency.

Upon the role of a CGI script in creating interactive web sites.
• Provide users with customized data through the use of CGI scripts.
• Save data to a file and a database.
• Use Perl's string manipulation features including regular expressions.
• Create and use cookies.

**Prereq. DPR 108, IMM 120** 3 Credits 3 Weekly Lecture Hours

**DPR 212 Data Structures & Algorithms**
This course focuses on problem analysis, algorithm design and refinement, and computer programming. Selection, loops, functions, parameter passing, arrays, and sorting and searching techniques are examined using C++. Software engineering methods and structured style and object oriented programming are emphasized.

Upon successful completion of this course, the student should be able to:
• Discuss software engineering and develop programs using good programming style and object oriented programming techniques.
• Use simple and advanced data types including linked lists, stacks, queues, and trees.
• Analyze the efficiency of various algorithms for looping, recursion, sorting, and searching.
• Use abstract data types, containers and class templates, encapsulation, inheritance, and polymorphism.
• Evaluate simple systems concepts such as input/output buffers, parameter passing, mechanisms, and memory management.

**Prereq. MAT 131 or MAT 160 and DPR 226 or DPR 205** 4 Credits 4 Weekly Lecture Hours

**DPR 222 Visual Basic Programming**
This course familiarizes students with ways to create single-use applications using Microsoft's Visual Basic (VB.NET) programming language. Students learn the fundamentals of Object Oriented Programming (OOPS) by designing, coding and testing simple Windows-based applications. The course is designed for students with an understanding of programming design and logic but who need to understand event-driven programming methods and techniques.

Upon successful completion of this course, students should be able to:
• Describe the differences between event-driven programs and procedure-driven programs.
• Define objects, properties, methods and events.
• Create applications that correctly declare and use variables, accept user input, use subroutines and functions, and use code loops and control structures.
• Locate and correct coding problems using debugging tools.

**Prereq. DPR 108** 4 Weekly Lecture Hours

**DPR 226 Object Oriented C++**
This course will teach students how to create single-user applications using Microsoft's Visual C++ programming language. Students will learn the fundamentals of Object Oriented Programming (OOPS) by designing, coding and testing simple applications. This course is designed for students that have an understanding of programming design and logic but need to understand object oriented programming methods and techniques. This is NOT a Visual C++ course. Upon successful completion of this course, the student should be able to:
• Explain the fundamentals of C++ programming.
• Use a C++ compiler.
• Create and use functions, templates, and friends in a C++ program.
• Use C++ classes.
• Create and initialize objects.
• Explain and use inheritance and derived classes.
• Use operator functions and operator overloading in a C++ Object Oriented program.
• Use Object Oriented Programming techniques.

**Prereq. DPR 206 or DPR 205**

**DPR 227 Introduction to PC Support**
This is the first part of the hands-on hardware preparation for students whose goal is to develop an understanding of operating systems to maintain and manage a personal computer. The course prepares students to understand the terminology and technically support ports, motherboards, microprocessors, memory, interrupt requests, basic power needs, chips, cables, troubleshooting and internet resource discovery both to find information and help in troubleshooting devices.

Upon successful completion of this course, the student should be able to:
• Identify the components of a typical microcomputer system.
• Demonstrate a knowledge of components such as ports, motherboards, microprocessors, memory, interrupt requests, basic power needs, chips, and cables.
• Troubleshoot the above devices using various techniques including Internet resources.
• Discuss error messages and their meanings.
• Install and support operating systems.
• Analyze conflicts and problems in both the hardware and software environment.

**Prereq. MAT 131 or MAT 160 and DPR 226 or DPR 205**

**DPR 228 PC Repair & Maintenance**
This course is a continuation of the hands-on course for students whose goal is to work with personal computer operating systems. The course prepares students to technically support personal computer repair and maintenance.

Upon successful completion of this course, the student should be able to:
• Apply knowledge of SCSI, IDE, and similar hard drive configurations.

**3 Credits 3 Weekly Lecture Hours**

**DPR 230 Introduction to Computer Game Programming**
This course teaches students the concepts of programming using the C++ language and DirectX. This course will introduce students to C++ Object oriented Programming, as well as, DirectX and its components. Students will create 2D and 3D objects, program animation sequences, add sound effects to games, create a virtual game world and program a full-featured role-playing game.

Upon successful completion of this course, the student should be able to:
• Describe the basic elements of an image and how to manipulate it.
• Describe types of sounds and how to obtain or create sounds and music.
• Identify and describe game genres. Identify the elements of good game design.
• Develop a 2D level game using Game Maker software.
• Develop a 3D level game using Game Maker software.

**Prereq. DPR 100**

**DPR 232 Introduction to Computer Game Design and Development**
This course is the introductory course to the computer game certificate program. It involves designing, developing and testing small 2D and 3D computer games using game development software tools. No programming experience is necessary. Upon successful completion of this course, the student should be able to:
• List requirements for a game development studio
• Describe the basic elements of an image and how to manipulate it.
• Describe types of sounds and how to obtain or create sounds and music.
• Identify and describe game genres. Identify the elements of good game design.
• Develop a 2D level game using Game Maker software.
• Develop a 3D level game using Game Maker software.

**3 Credits 3 Weekly Lecture Hours**

**DPR 234 Introduction to Computer Game Design and Development**
This course teaches students the concepts of programming using the C++ language and DirectX. This course will introduce students to C++ Object oriented Programming, as well as, DirectX and its components. Students will create 2D and 3D objects, program animation sequences, add sound effects to games, create a virtual game world and program a full-featured role-playing game.

Upon successful completion of this course, the student should be able to:
• Describe the elements of game programming.
• Create a Windows program.
• Create a DirectX program.
• Use point, vertices and graphic primitives.
• Use Direct3D textures to create a texture surface.
• Create a DirectX animation program.
• Create and program sounds.
• Create a Role Playing Game (RPG) using DirectX.

**4 Credits 3 Weekly Lecture Hours 1 Weekly Laboratory Hours**

**DPR 236 Game Art & Animation**
The focus of this course is to create 2D artwork, 3D models, arrange UV's, generate textures and create a 3D computer video game. The objective of this course is for students to demonstrate their ability to create 3D models using popular modeling software.
DPR 238  Game Design Theory & Practice

This course will give the student the theory and practical aspects of the entire game development process. Students will brainstorm a game idea, establish focus, determine the storytelling mode, analyze several games, and document the design and play testing scenarios.

Upon successful completion of this course, the student should be able to:
• Describe the computer video game development process.
• Identify the techniques of top game designers.
• Analyze and identify the elements that make successful games.
• Create design documents.

3 Credits  3 Weekly Lecture Hours

DPR 250  Game Portfolio

The focus of the Game Portfolio course is to design a computer game portfolio that makes evident a student’s knowledge and skills of computer game design, development and use of game engines. The portfolio is a collection of material that can be used as an interactive resume, an archive of work over time or a demonstration of proficiency. The contents of a student’s game portfolio can include work samples, letters of recommendation, references, transcripts, GPA, accomplishments/awards, competency lists, certifications, curricular standards, instructor assessments/evaluation and work experiences/employer evaluations. Thus, a student’s game portfolio provides the ability to show work on demand and evidence of their preparation for a career in the computer game industry.

The objective of this course is for students to demonstrate the theoretical as well as the technical skills they have acquired throughout the program. Students will assess personal strengths to establish a career goal and decide how to organize their game design and production work in a graduation portfolio.

Upon successful completion of this course, the student should be able to:
• Identify the need for a computer game portfolio.
• Identify the target audience of a computer game portfolio.
• Demonstrate the ability to organize, collect and prepare material for a game portfolio.
• Understand copyright laws for computer games.
• Demonstrate the ability to design and develop a 2D and 3D computer game.
• Demonstrate the use of object oriented programming and game engine software tools to develop a computer game portfolio.

Prereq. All gaming option courses

3 Credits  3 Weekly Lecture Hours

DPR 253  Integrated Software

The integrated software applications course is designed to be the capstone course in the professionalization of the Microsoft Office Specialist. The students will complete two integrated computer simulations. These simulations will include word processing, database, spreadsheet, and graphic presentation software. A graphics presentation is required in the course.

Upon successful completion of this course, the student should be able to:
• Identify the requirements of a 3D model.
• Identify the requirements of 2D artwork.
• Demonstrate the ability to organize, collect and prepare material for a 3D video game.
• Understand how to use a 3D modeling software product.
• Demonstrate the ability to design and develop a 2D artwork.
• Demonstrate computer animation techniques.

3 Credits  3 Weekly Lecture Hours

(DRA) Drama

DRA 100  Introduction to Theatre

This course surveys the world’s dramatic literature by concentrating on text analysis of a representative sample of plays of varying periods (ancient, classical, modern) and types (tragedy, comedy, drama). Emphasis is placed on the plays in performance. Field trips to theatrical productions may be scheduled. This is not an acting course.

Upon successful completion of this course, students should be able to:
• Identify the development of theatre the social, cultural, economic, religious and political forces that have shaped the student’s world.
• Identify positive values through attending plays that will broaden and enrich the student’s life.
• Develop and expand the student’s sensory perception through the critical reading of play texts.
• Write and present oral critiques of plays seen and studied, using standards of drama criticism that enlarge the student’s appreciation of the art form.
• Apply theatre attendance in life as a continuing educational experience that enriches career aspirations and broadens cultural perspective.

Prereq. ENG 050 andREA 050

3 Credits  3 Weekly Lecture Hours

DRA 101  Acting Shakespeare

Acting Shakespeare is designed with the knowledge that the plays of Shakespeare were written to be spoken aloud, by actors on a stage. This course will investigate the plays of Shakespeare with that reality in mind, and introduce students to the myriad techniques Shakespeare used in his writing which assist the actor in the performance of his characters and the onstage telling of his stories. Acting and performance techniques from Shakespeare’s day to the present will be explored through vocal and movement exercises. Students are required to read several Shakespearean plays and to analyze the texts with the goal of performing monologues and scenes from those plays. Plays in performance will be emphasized and students will watch filmed stage productions. Students will be required to see a live theatrical production of a Shakespearean play when possible.

Upon successful completion of this course, students should be able to:
• Demonstrate, through text analysis and performance, an understanding of the fundamentals of Shakespeare’s verse and prose and how these relate to the acting of those texts
• Demonstrate a working knowledge of acting techniques which have been applied to the works of Shakespeare throughout history.
• Bring to life one of Shakespeare’s characters from the plays, both physically and psychologically, and be able to communicate that character’s needs and intentions through performance.
• Effectively use vocal techniques to bring Shakespeare’s words, rhythms, and imagery to life.

Prereq. ENG 050 andREA 050

3 Credits  3 Weekly Lecture Hours

DRA 110  Acting I

This acting course is designed to provide students with the basic rudiments of acting. Emphasis is on movement, breathing, voice, (diction, projection, emphasis, interpretation), and script and character analysis. Students are required to read several plays and to attend at least two performances at area theaters. The hour TBA is provided for rehearsals. Theatre majors are encouraged to take DRA 100 in conjunction with this course as it provides insight into script analysis and staging practices.

Upon successful completion of this course, students should be able to:
• Describe the procedure for bringing a written script to performance.
• Demonstrate basic voice and movement techniques.
• Evaluate acting techniques.
• Recognize the various components of an artistic endeavor, including the roles of self-discipline, motivation, flexibility, cooperation and creativity.
• Perform short monologues and dialogues.

Prereq ENG 050 andREA 050

3 Credits  3 Weekly Lecture Hours

DRA 111  Acting II

Acting II is a continuation of Acting I. In this course, students refine skills they developed in Acting I and continue to explore the acting process through readings, theatre attendance and performance work. Emphasis is on character development through improvisation, script analysis, movement and scene projects. Students also examine the role of imagination, perception and creativity in acting.

Upon successful completion of this course, students should be able to:
• Identify period acting styles.
• Demonstrate physical and aesthetic awareness of acting techniques.
• Demonstrate an understanding of character interpretation through movement and voice control.
• Work effectively with others on acting projects.
• Demonstrate imaginative and creative talents through the actualization of theatrical concepts of acting.

Prereq. DRA 110 or Instructor Permission

3 Credits  3 Weekly Lecture Hours

DRA 116  Stagecraft

This is a workshop course; you will learn by doing. Students have the opportunity to learn how to paint scenic efforts, design stage lighting and sound, and construct basic set pieces and architectural details. Students will also learn the basics of costume and makeup design and apply those basic concepts, creating costumes and applying makeup designs such as corrective makeup and old-age. Students must attend all rehearsals and performances where they will serve as members of the stage crew or the lighting and sound crew. Students can expect to work a considerable number of hours outside the normal classroom meeting time.

Upon successful completion of this course, students should be able to:
• Design a simple stage set
• Design basic stage lighting
• Use basic carpenter’s tools safely and with precision
• Paint simple scenic efforts, such as rocks, wood, texture, etc.
• Orchestrate the movements of a stage crew to efficiently remove and erect stage sets before during and after performances.

Prereq. All theater option courses

3 Credits  3 Weekly Lecture Hours
• Apply basic and old-age makeup
• Apply scars and bruises using makeup techniques learned in class
• Demonstrate knowledge of period makeup, hair, and costumes
• Design costumes for a specific play from concept to final design
• Create makeup and hair design for specific play

Prereq. ENG 050 and REA 050

3 Credits 3 Weekly Lecture Hours

ECE 110 Methods and Materials in Early Childhood Education I

This course deals with the methods and materials available for teaching the knowledge, skills and attitudes normally found in integrated Early Childhood Education curricula. It emphasizes a holistic approach to Early-Childhood Education.

Upon successful completion of this course, students should be able to:
• Identify materials and methods that will effectively foster the physical, social and emotional development of young children.
• Evaluate the appropriateness of materials and methods employed in creative and craft activities in an early-childhood education curriculum.
• Characterize methods and materials that will effectively promote a positive attitude toward language arts, natural and physical science, social sciences and numbers operations in young children.

Prereq. ENG 050 and REA 050

3 Credits 3 Weekly Lecture Hours

ECE 111 Methods and Materials in Early Childhood Education II

This course deals with the materials and methods available for teaching the knowledge, skills and attitudes normally found in integrated Early Childhood Education curricula. It emphasizes a holistic approach to Early-Childhood Education.

Upon successful completion of this course, students should be able to:
• Design an early-childhood education environment that effectively fosters the development of social, emotional, moral, physical and mental abilities in young children.
• Create age-appropriate arts and crafts activities that effectively promote the development of young children.
• Design a series of lessons and activities that effectively promote a positive attitude toward language arts, natural and physical science, social sciences and numbers operations in young children.

Prereq. ECE 110

3 Credits 3 Weekly Lecture Hours

(ECE) Early Childhood Education

ECE 100 Principles of Early Childhood Education

This course examines the historical development of early-childhood education and the concerns, principles, practices and problems of organization and teaching in early-childhood education facilities. To assist students in gaining this knowledge in a well-organized manner, the course is structured into areas of competence.

Upon successful completion of this course, students should be able to:
• Demonstrate knowledge of the variety of formal schools and centers for young children.
• Demonstrate the knowledge necessary for the successful operations of schools and centers for young children.
• Demonstrate an appreciation of the importance of the early years of the child and the importance of relating to young children as persons.
• Demonstrate knowledge and understanding of the importance of working with parents as partners.

3 Credits 3 Weekly Lecture Hours

ECE 120 Early Childhood Education Laboratory I

A student's first laboratory experience will focus on the development of interpersonal relationship skills and qualities necessary to become a good teacher of young children. To assist students with gaining this knowledge in a well-organized manner, the course is structured into 10 areas of competence.

Upon successful completion of the course, students should be able to:
• Demonstrate an ability to quickly gain the confidence of the child, the parent and their teachers in the students' ability to provide a meaningful educational experience in a friendly climate.
• Exhibit social adequacy in a professional setting.
• Communicate effectively with children, teachers, and parents.
• Exhibit a professional attitude toward assigned responsibilities.

4 Credits 1 Weekly Lecture Hours 6 Weekly Laboratory Hours

ECE 112 Developing a Professional Portfolio and Resource File for ECE

This course will prepare the student to be able to develop a professional portfolio that will demonstrate their competency in teaching in the field of Early Childhood Education. Students will gain knowledge of the how to create and maintain their portfolio and how to use it in their careers. This course will also prepare the student for assessment by the Council for Professional Recognition for the Child Development Associate Credential by including requirements for the Professional Resource File.

Upon successful completion of this course, students should be able to:
• Identify the purpose of developing a professional portfolio.
• Identify the key components of a professional portfolio.
• Develop artifacts to demonstrate teaching competency.
• Identify and compile resources to support teaching activities.
• Develop the Child Development Associate Credential Professional Resource File.
• Understand the importance of lifelong learning.
• Develop a portfolio utilizing key components, artifacts for inclusion, and resources necessary to demonstrate professional competency.

Prereq. ECE 100

1 Credit

ECE 130 Early Childhood Development

This course examines the physical, intellectual, emotional and social development of the child from prenatal life through early-childhood years. To assist students in gaining this knowledge in a well-organized manner, the course is structured into six areas of competence.

Upon successful completion of the course, students should be able to:
• Detail the significance of child development to the educator.
• Assess all major theories of development.
• Sift the determinants of development.
• Trace the development in the beginning of life.
• Dify the development through the first two years.
• Depict early-childhood development ages two to six.

3 Credits 3 Weekly Lecture Hours

ECE 131 Observing and Recording the Behavior of the Young Child

This course is designed to increase objectivity and proficiency in reporting and assessing child behavior. The student observes and interprets the behavior of young children and writes analyses of these observations.

Upon successful completion of this course, students should be able to:
• Analyze the various ways children express themselves.
• Explicate the uses of observation and recording in early-childhood education.
**ECE 220** Health, Safety and Nutrition in Early Childhood Education

This course presents health, safety and nutrition practices essential to prepare early childhood education teachers to provide and support the total growth of young children.

Upon successful completion of this course, students should be able to:

- Interpret the state regulations as they pertain to the health, safety and nutrition needs of children in early-childhood education.
- Describe the basic characteristics of an efficient and effective health-care program for young children.
- Detail the basic components of a nutrition program for young children.
- Depict the basic component of a safety program for young children.

3 Credits 3 Weekly Lecture Hours

**ECE 290** Administration and Supervision of Early Care and Education Environments

This course will examine the varied aspects of administration and supervision in the early care and education environment. It is designed for early childhood educators who are or would like to take on an administrative role in an early childhood program. All administrative aspects of the early care and education program will be explored with particular emphasis on the development of interpersonal relationships and skills needed for effective program management.

Upon successful completion of this course, students should be able to:

- Identify the varied roles of the early care and education director.
- Utilize licensing and certification requirements in decision making.
- Evaluate strategies for staff recruitment, supervision and retention.
- Analyze enrollment practices and policies.
- Implement effective strategies for working with families.
- Identify personal leadership styles and role in program administration.
- Design the physical environment to meet needs of children and staff.
- Evaluate communication between parents, staff and administration.

Prerequisites: AAS or AS in ECE or related field OR completed 45 hours towards an AAS degree

45 credits towards the ECE degree

3 Credits 3 Weekly Lecture Hours

**ECE 291** Current Issues and Trends in Early Care and Education

This course will examine the current issues and trends in early childhood education. Through the use of discussions, debates and disagreement, current issues will be identified and a generation of solutions will be formulated. The design of this course is such that the early childhood educator will become a reflective decision maker.

Upon successful completion of this course, students should be able to:

- Identify factors that lead to effective leadership.
- Be able to evaluate role of government in early care and education.
- Learn to advocate for young children.
- Analyze the role of business in early care and education.
- Develop strategies for promoting professional development.
- Develop and maintaining standards of quality improvement.
- Evaluate the quality of early care and education environments.
- Analyze the role of families.
- Identify supports for special needs children and families.

45 credits towards an ECE degree

3 Credits 3 Weekly Lecture Hours

**ECE 293** Financial Strategies for the Business of Early Care and Education

This course will examine financial and business management strategies associated with managing a childcare center. Topics covered will include marketing, budgeting, business plans, for profit versus nonprofit financial strategies; grant writing, enrollment, cost of care and staffing issues. This course is designed as an interactive, hands-on approach to learning for the center director or the early childhood professional who would like to be a center director.

Upon successful completion of this course, students should be able to:

- Basic principles of accounting and budgeting.
- The advantages and disadvantages of for profit versus non-profit early care and education centers.
- Business plans and marketing strategies.
- Human resource management.
- True cost of care.
- City and state agencies that provide financial support to families and early care and education.
- Basic principles of grant writing.

45 credits towards the ECE degree

3 Credits 3 Weekly Lecture Hours

(ECO) Economics

**ECO 210** Macroeconomic Principles

This course is designed to help beginning economics students comprehend the principles essential for understanding the basic economizing problem, specific economic issues, such as, Unemployment, Inflation and the process by which prices, in competitive markets, are determined. Students will also study some key aspects of International Economics, its importance and impact on the domestic economy. This course will also assist students to understand and reason accurately and objectively about economic matters.

Successful completion of this course should enable students to verbally, graphically and mathematically:

- Show how economic resources and goals relate to a price system based on supply and demand.
- Explain how the economy can be assessed through national income accounts (GNP, NI, PI, DI).
- Identify and evaluate the economic consequences of different trade policies.
- Explain how fixed and flexible exchange rates influence balance of payments accounts: the Current Account, the Capital Account and the Official Reserve Account.
- Assess the significance of international trade and finance for the U.S. and world economies.
- Evaluate economic instability and fiscal policy through classical Keynesian and monetarist models.
- Explain how financial markets, the Federal Reserve System and the banking system interrelate in monetary policy.

Prerequisite: MAT 080

3 Credits 3 Weekly Lecture Hours

**ECO 220** Microeconomic Principles

Microeconomics is a course designed to help beginning economics students comprehend the principles essential for understanding the basic economizing problem, behavior of individual households and firms in market economy, and how the complex forces of Demand and Supply determine the prices of goods and services in these markets. Students will also learn how to analyze several market structures: Perfect Competition, Monopoly, Oligopoly, Monopolistic Competition. They will study some key aspects of International Economics, its importance and impact on the domestic economy.

Successful completion of this course should enable the student to verbally, graphically and mathematically:

- Identify supports for special needs children and families.
• Explain how elasticity and utility modify goods allocations.
• Relate short-run and long-run costs to the production decisions of firms.
• Distinguish and comparatively evaluate perfect competition, monopoly, monopsonistic competition and oligopoly in terms of cost curves, profit maximizing and economic goals.
• Show how the factor markets are affected by supply, demand, economic rent, interest and profit.
• Explain market failure through the interaction of public and private sectors of the economy where externalities, public goods, poverty and growth are involved.
• Assess the significance of international trade and finance for the U.S. and world economics.

Prereq: ENG 150 and REA 150 or pass test

3 Credits 3 Weekly Lecture Hours

EDU 205  Strategies for Effective Classroom Management

This course will review the major theories of effective classroom management and the various models of effective classroom discipline. The course maintains that effective discipline must be taught, and it occurs in a collaborative school culture.

Upon successful completion of the course, students should be able to:
• Evaluate, analyze, and synthesize ideas from a variety of research sources and formulate a preventative model of classroom management.
• Analyze a classroom environment for effective classroom management strategies.
• Apply critical thinking and information literacy strategies to understand the concepts of an effective classroom environment.
• Demonstrate an understanding of effective teaching.

Prereq: EDU 200

3 Credits 3 Weekly Lecture Hours

EDU 206  Technology in Education

This course is a one-semester introduction to the use of computers in the elementary and secondary school classroom with an emphasis on successfully integrating technology-based materials to enhance student learning. The course will combine educational theory with computer-based activities to complement major course concepts. In addition, a course website will be used to encourage communication and information sharing among course participants.

Upon successful completion of the course, students should be able to:
• Increase knowledge of computers, networking, the Internet and World Wide Web as they relate to K-12 education.
• Identify appropriate methods of evaluating websites and software applications. Describe current instructional principles, research and appropriate assessment practices as related to the use of computers and technology resources in the classroom.
• Discuss and critique issues related to use of computers in education, including security, equity, copyright and ethics of using the Internet in the classroom. Construct appropriate applications of technology to specific instructional situations.
• Design or develop appropriate instructional technology-based applications.
• Name appropriate professional development resources for maintaining currency in the field.
• Use technology involved in developing technology-based instructional materials in various formats.

Prereq: DPR 100

3 Credits 3 Weekly Lecture Hours

EDU 207  Foundations of Literacy, PK4

This course is designed to prepare students for teaching reading using a balanced approach of various theoretical teaching models based on current research and knowledge. Through readings, lectures and class activities, students will develop a solid understanding of the reading process and how to construct and manage a classroom environment that promotes optimal literacy learning. Students will acquire knowledge about how to meet the diverse needs of learners at all stages of literacy development. In addition, students will learn how to formally and informally assess students to monitor reading progress and plan appropriate reading instruction.

Upon successful completion of this course, students should be able to:
• Develop a philosophy of reading that reflects knowledge of the major theories of literacy development and instruction.
• Understand that literacy is a developmental process that is emergent and continuously involved.
• Demonstrate understanding of how personal beliefs and histories influence the teaching of reading
• Develop instructional activities that would engage students in shared reading, reading aloud, guided reading, shared writing, interactive writing and word study.
• Observe, identify, learn and practice the different models and strategies for teaching reading instruction.
• Understand how technology can be integrated into literacy instruction.
• Design balanced literacy instruction that includes listening, speaking, reading comprehension, writing, vocabulary and word study activities.
• Use assessments to make informed decisions in literacy instruction.
• Implement strategies for infusing literacy across content areas in a balanced literacy format.
• Organize time, space, materials, and activities for differentiated literacy instruction in multicultural/multilingual classrooms.

3 Credits 3 Weekly Lecture Hours

EDU 215  Theory and Field Experience In Elementary Education

This course will provide an orientation to various aspects of teaching in K-6 schools. Topics will include curriculum, planning, effective instruction, discipline, and the structure of the school. Field experiences will be related to course topics. Students will complete 36 hours of observation in the field. Field Experience will give students the opportunity to visit schools and classrooms prior to student teaching to observe and reflect on the principles and practices learned in the college classroom. Furthermore, students will come in contact with children having varying needs and educational issues.

Upon successful completion of the course, students should be able to:
• Describe the structures that support school programs, including personnel roles, classroom organization, and resources.
• Explain the role of curriculum, and various ways of effectively teaching it to students.
• Demonstrate an understanding of the role of the classroom teacher on a daily basis and as a professional.
• Demonstrate an understanding of the factors that support a safe and positive classroom climate, and how to create it.
• Describe the role and functions of the State Department of Education.

Prereq: ENG 112, PSY 140, EDU 200

3 Credits 3 Weekly Lecture Hours

EDU 220  Introduction to Special Education

This course will provide an introduction to the field of special education and the major provisions of special education regulations and law. It will also review the major needs of students with disabilities and how to plan instruction for them. Students will learn the uses for various kinds of assignments and adaptations to meet the needs of specialized population in K-12 schools.

Upon successful completion of this course, students should be able to:
• Demonstrate an understanding of the role of the classroom teacher on a daily basis and as a professional.
• Design and implement appropriate instructional technology-based materials for maintaining currency in the field.
• Use technology involved in developing technology-based instructional materials in various formats.

Prereq: DPR 100

3 Credits 3 Weekly Lecture Hours
EGR 100  Engineering Graphics
The fundamentals of drafting, space geometry of points, lines and surfaces, graphs, graphical mathematics and design projects.

Upon successful completion of this course, students should be able to:
- Reduce concepts and configurations to freehand sketches.
- Construct orthographic drawings using drafting standards, conventions and instruments.
- Construct pictorial and axonometric instrument drawings.
- Solve descriptive geometry problems.
- Apply the principles of graphic mathematics to scales, graphs, nomograms, empirical equations and Graphical calculus.
- Create and plot computer-aided drawings.
- Solve individual and group preliminary design projects.

Prerequisite: MAT 140 or satisfactory score Math Placement test score

3 Credits 2 Weekly Lecture Hours

EGR 150  Engineering Topics
This course is a required series of eight seminars designed to introduce first year engineering students to skills and topics of importance in engineering and is taken in the second semester of the engineering curriculum. Presented by both DCCC faculty/staff and invited speakers, the weekly one-hour seminars cover technical writing and communication, research design, error analysis and internet research, along with presentations by practicing mechanical, chemical, electrical and computer engineers.

Upon successful completion of this course, students should be able to:
- Use the Internet as a research tool in engineering.
- Write a concise and accurate technical abstract on an engineering topic in an appropriate style.
- Propose a research design for a specific engineering problem.
- Explain how error analysis may be applied to a specific engineering problem.
- Discuss the role of engineers in the current and future economic and technological environment.
- Describe the technical areas in which practicing engineers work.
- Clarify general or specific career goals in engineering.

Prerequisite: ENG 050 and REA 050

1 Credit 1 Weekly Lecture Hours

EGR 200  Engineering Mechanics I
A vector mechanics study of forces acting on static particles and rigid bodies. Equilibrium of rigid bodies, distributed body forces acting on centroid, centers of gravity and moments of inertia, analysis of structures, forces in beams and cables, friction and virtual work are topics covered.

Upon successful completion of this course, students should be able to:
- Resolve forces acting in plane and space configurations.
- Develop equivalent-force systems by means of vector, dot, cross and triple products.
- Solve equilibrium problems on two- and three-dimensional bodies.
- Determine the effect of distributed forces on bodies in terms of center of gravity and moment of inertia.
- Analyze the internal forces on structures such as trusses, frames, machines, beams and cables.
- Investigate the friction between moving components on mechanisms such as wedges, screws, bearings, wheels and belts.
- Use the method of virtual work to solve for forces, mechanical efficiency, potential energy, equilibrium and stability.

Prerequisite: MAT 161 and PHY 131

3 Credits 3 Weekly Lecture Hours

EGR 201  Engineering Mechanics II
A course in vector dynamics. Topics include the kinematics and kinetics of particles and rigid bodies in plane and three-dimensional motion. Force, energy and momentum methods, as well as the study of unidirectional vibrations are covered.

Upon successful completion of the course, students should be able to:
- Analyze the kinematics of particles and rigid bodies for unidirectional, bidirectional and general motion.
- Develop the kinetics of particles and rigid bodies in terms of force, energy and momentum for unidirectional, bidirectional and general motion.
- Determine the motion of single particles and rigid bodies in one-dimensional vibrating or oscillating systems.

Prerequisite: MAT 161 and PHY 131

3 Credits 3 Weekly Lecture Hours

EGR 210  Engineering Circuits
A first course in circuits for engineers. Uses the basic concepts of modern circuit analysis. Topics include two-terminal devices and their classification, circuit topology and Kirchoff's Laws, lumped-circuit analysis using matrix algebra, controlled and independent sources, power and energy, and second-order time-domain techniques (including singularity functions, convolution and introductory state-variable techniques). Theory will be illustrated by laboratory and class assignments. Upon successful completion of this course, students should be able to:
- Set up and solve circuit problems using mesh analysis.
- Set up and solve circuit problems using nodal analysis.
- Set up and solve for the transient response of first-order and second-order circuits.
- Find the initial conditions of first-order and second-order circuits.
- Use instruments (DMM, power supplies, function generators, oscilloscopes) to measure various electrical quantities.
- Find the impulse response of electrical circuits.
- Find the response to a given input of an electrical circuit using convolution.

Prerequisite: PHY 132, Coreq. MAT 261

4 Credits 3 Weekly Lecture Hours

EGR 220  Engineering Thermodynamics
Engineering Thermodynamics is an introductory one-semester course with lecture, demonstrations, and computer simulations, designed for engineering and science students. Major topics include: concepts of thermodynamics; pressure, temperature, heat and heat transfer; properties of substances; density; extensive and intensive properties; First Law of Thermodynamics and its application; Second Law of Thermodynamics and its application; irreversible and reversible processes, the Clausius, Kelvin, and Planck statements of the Second Law; entropy and Carnot, Otto, Diesel, and Rankine cycles; power cycles and the refrigeration cycle.

Upon completion of this course, the student should be able to:
- Understand the basic concepts and definitions needed to apply the laws of thermodynamics.
- Describe the properties and behavior of a pure substance.
- Develop the First Law of Thermodynamics and apply it to control volume problems.
- State the Second Law of Thermodynamics and describe its significance to the analysis of cycles and processes.
- Understand the concept of entropy and its relationship to the Second Law of Thermodynamics.
- Analyze the operation of power and refrigeration systems.

Prerequisite: PHY 132, MAT 161, CHE 110.

3 Credits 3 Weekly Lecture Hours

ELT 100  Residential Wire I
Residential Wiring I provides students with the basic skills necessary in the field of electrical construction. The course of study emphasizes the proper application of materials, safety and the National Electrical Code. The student will review math skills to prepare for calculations necessary in the electrical field.

Upon successful completion of this course, students should be able to:
- Explain how information is conveyed to the electrician in the field via plans and specifications.
- Compute proper box sizing per the National Electrical Code.
- Calculate proper electrical service requirements for an intended use.
- Perform basic calculations necessary for a safe and efficient installation.
- Describe basic electrical circuits.
- Specify material appropriate for residential use per the National Electrical Code.
- State the function of basic electrical safety devices such as ground-fault circuit interrupters and circuit breaker.
- Size conductors and over current devices.

4 Credits 3 Weekly Lecture Hours

ELT 101  Residential Wire
The Residential Wire course is devoted to all aspects of residential wiring. Students will have the opportunity to take part in new house wiring that will include: lighting receptacles major appliances, alarm systems, telephone, television, and an electrical service. Additionally, students will learn how to wire major house additions, upgrading of a kitchen, how to wire older houses and work with 'knob and tube' electrical systems. This course will stress National Electric Code compliance and demonstrate proper application of materials, methods of installation that are safe and free from defects.

Upon successful completion of this course, students should be able to:
- Layout and install cable and make connections.
- Identify cabling requirements for dedicated circuits in

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addition to general lighting needs.• Re-cable an upgraded kitchen from Rip-out to Reinstall-
lution. This will require calculating circuit loads, deter-
mining cable types and sizes and over-current devices.
• Determine the maximum number of conductors permitted
in a given size electrical box in accordance with de-
rating factors.
• Understand the difference between grounded and un-
grounded conductors.
• State the difference between the terms ground, grounding
and bonding.
• Understand NEC requirements; where and how GFCI and
AFCI circuits are installed.
• Define the terms electrical service, overhead services,
service drop and service lateral.
• Describe how to determine the electric service
requirements based on the calculated load for a dwelling.
• Identify and apply electrical materials and how they
are used.
• Prepare residential drawings as per NEC and standard
wiring practices.
• Describe the different types of non-metallic and metallic
boxes and determine where and how used.
• Describe outdoor residential wiring applications, when
and how to use PVC conduit, underground cable, water-
proofing wiring functions, etc.
• Demonstrate an understanding of the general
requirements for wiring as they apply to residential
rough-in wiring.

Prereq. ELT 104
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours
ELT 102 Commercial Wire I
Commercial Wiring I presents the requirements of a
commercial electrical installation. Specific commercial
installation methods, techniques, materials and National
Electrical Code requirements will be presented.
Upon successful completion of this course, students
should be able to:
• Define job requirements from the contract documents.
• Identify and properly apply different wiring devices.
• Size and apply various types of conduits.
• Install electrical boxes.
• Size and install branch circuits per National Electrical
code requirements.
• Demonstrate a working knowledge of special raceways,
outlets and communication systems.
• Read engineering drawings.
• Properly apply National Electrical Code requirements to
the intended use presented by engineering drawings.
• Describe the different types of lighting systems and
associated fixtures.

Prereq. ELT 101
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours
ELT 104 Introduction to Electricity
This introductory course is intended to acquaint students
in a hands-on mode with the basic skills and knowledge of
working with electrical logic. This course will become
acquainted with the operational aspects of plcs, components,
circuitry, testing of PLC
and ladder logic. In addition, they will become acquainted
with the Fundamentals of basic electrical systems and
programming logic controllers. Students will learn to interpret electrical and
mechanical equipment.

ELT 204 Introduction to Programmable Logic Controllers
This introductory course is intended to acquaint students
in a hands-on mode with the basic skills and knowledge of
programmable logic controllers, with respect to Industrial
Systems. Students will learn to interpret electrical and
Programmable Logic Controller (PLC) input/output diagrams and
ladder logic. In addition, they will become acquainted with
PLC functions, components, circuitry, testing of PLC
programs and troubleshooting a PLC system. This course is
recommended for students with little or no programmable
logic controller experience. Upon successful completion of
this course, students should be able to:
• Discuss terminology associated with PLCs.
• Describe the function, uses and operation of a PLC.
• Define the function and operation of input/output
diagrams and system networks.
• Interpret ladder logic to determine the functions of
a mechanical equipment.
• Discuss event driven sequencing as it relates to the input and output terminals of the PLC
• Compare the operation of a PLC to manual and automatic control devices.
• Decode which inputs and outputs are controlling internal counters and math functions.
• Interface wiring ladder logic diagrams with controller equipment.
• List the functions and types of timer instructions and give applications.
• Diagnose a PLC program, as it relates to mechanical environment.
• Use PLC diagnostic equipment.
• Diagnose a motor control program in both manual and automatic modes.
• Analyze the consequences on the system being controlled of changing a PLC program.
• Identify the function and operation of a program interlock and give an application.
• Troubleshoot various levels of PLC systems to include up and down counter, timer and branching instructions.

Prerequisite: IST 105, TME 115 Coreq. ELT 203
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

ELT 205 Advanced Residential Wire

Advanced Residential Wire presents the requirements of the more complex electrical installations. The course will acquaint students with the installation of electrical service-entrance equipment; both single and three phase services and requirements for each type of system. Students will also be exposed to all types of raceways conduits and cables and identify the appropriate use for each. All installations methods, techniques and materials will be in accordance with the NEC.

Upon successful completion of this course, students should be able to:
• Properly apply the NEC requirements to the intended use presented by engineering drawings.
• Calculate the minimum lighting and equipment loading.
• Determine the required minimum size of conductors and the appropriate over-current protection device.
• Select proper type and size of raceway to meet environment conditions and circuit loading.
• Determine branch circuit ratings, conductor size and over-current protection for major appliances and motors.
• Fabricate assorted conduit bends using rigid and Electrical Metallic Tubing (EMT).
• Understand issues involved in housing remodel work.
• Calculate feeder loading and determine the minimum feeder conductor size and rating of over-current protective devices.
• Calculate voltage drop on feeders and branch circuits.
• Understand the difference between single phase and three phase electrical services and what necessitates the need for each.
• Tabulate materials required to install an electrical rough-in; lay-out an electrical system for a new house; how to prepare an estimate to include materials, labor and associated costs.
• Identify and apply the criteria for selecting a service panel board and feeder size.
• Determine de-rating and correction factors for calculating conductor’s current carrying capacity.
• Comprehend the NEC requirements for electric furnaces, electric baseboard and heat pumps.
• Discuss the general requirement for the installation of security systems, smoke, heat and carbon-monoxide alarms.
• Demonstrate an understanding of different lamp types used in residential wiring; i.e. incandescent, fluorescent, high-intensity discharge (HID) and halogen.

Prerequisite: Residential Wire, ELT 101
4 credit hours 4 Credits 4 Weekly Lecture Hours

ELT 206 Commercial Wire

This course provides an in-depth comprehension of commercial wiring. It includes the understanding of electrical power needs and distribution requirements for a typical commercial facility. The course stresses the application of the NEC requirements to support calculations necessary to have a safe and efficient commercial installation. Students will become knowledgeable of wiring for special circuits, appliances and loads such as, but not limited to, refrigeration, HVAC, food preparation apparatus and associated loads relative to various types of commercial wiring. The course will include requirements for a thorough study of commercial service entrance equipment from the utility company’s service drop to the building’s main switchboard.

Upon successful completion of this course, students should be able to:
• Demonstrate the application of commercial building plans and specifications and interpret electrical symbols.
• Compute the correct service entrance feeder size, number of circuits and identify the criteria for selecting the appropriate service equipment.
• Comprehend installation requirements for commercial wiring.
• Demonstrate an understanding of the common techniques to determine whether a circuit has a short circuit, a ground fault or an open circuit and troubleshoot common residential electrical system problems.
• Draw basic Wye and Delta transformer diagrams and make necessary connections.
• Identify and comprehend entrance grounding requirements.
• Determine the preferred and required minimum size conductors for lighting, appliances and general purpose branch circuits.
• Compute the lighting watts per square foot for a commercial building.
• Identify types of lighting fixtures used.
• Demonstrate the correct connections for wiring a low-voltage remote control system.
• Identify the different types of emergency power systems and all the sub-components and site requirements.
• Demonstrate knowledge of transformers, disconnecting devices, service entrances and metering configuration in a commercial building.
• Determine the proper raceway type and size dependent on conductors to be installed and box size for approved box fill.
• Describe both Wye and Delta connected three-phase services.
• Calculate loads for single-phase and three-phase branch circuits.
• Calculate loads for a retail store, office building, both single and multi-family dwellings, restaurant and other institutional projects.

Prerequisite: Commercial Wire, ELT 206
4 Credits 4 Weekly Lecture Hours

EMER 105 Incident Management

This course is designed to provide the student with an overview of the Incident Command-Unified Command Structure. Additionally, a look at incident management from various perspectives such as local fire departments, industrial settings, the Oklahoma City bombing, and others will be discussed. The student will work in an interactive program to prepare for future roles and responsibilities as those charged with a management role in incident command, control or mitigation. Moreover, the student will learn from the experiences of others; sharpening their understanding and skills relative to the dimensions of emergency incident management.

Upon successful completion of this course, the student should be able to:
• Define the terms and regulatory framework of incident management.
• Identify the roles and responsibilities associated with incident management.
• Differentiate between Incident Command and Unified Command.
• Recognize the need for, and the role of, various functionaries in the incident management system.
• Define the terms teamwork and cooperation in incident management.
• Identify the consequences of a poor or ineffective incident management structure.
• Recognize the need for, and use of, incident management.  
• Describe how incident management is applied in various emergencies.

Prerequisite: ELT 206
3 Credits 3 Weekly Lecture Hours

(EMER) Emergency Response
EMER 110 Emergency Planning

This course will introduce the student to the concepts of Emergency and Crisis Planning. The course provides an overview of the entire concept of planning as an activity to anticipate, prevent, prepare for, respond to, and recover from any incident. Through a dynamic process, the course will break down the planning process into understandable parts such as hazard analysis, resource assessment, plan development, coordination with others, and plan implementation training and education. In addition, the student will work in an interactive program to establish a planning process for their company or municipality. The student will learn from the experiences and circumstances of others while sharpening their understanding and skills relative to the dimensions of Emergency Planning and Management.

Upon successful completion of this course, students should be able to:

- Define the terms and regulatory framework of emergency planning.
- Identify the roles and responsibilities associated with the planning process.
- Differentiate between “Emergency Planning” and “Emergency Management”.
- Recognize the need for Emergency Planning and the role of various functionaries in the process.
- Define the terms “teamwork” and “cooperation” in emergency planning.
- Identify the pitfalls of a poor or ineffective emergency planning system.
- Recognize the need for, and the use of, emergency planning.
- Describe how emergency planning affects emergency preparedness, response, and recovery.

3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

EMER 120 Leadership and Influence

This course will provide the student with an overview of the theories and concepts of leadership development. The course will examine leadership from a value (core values) approach, systems (chain of command) approach, a functional approach and a skills approach (motivation, supervision, and communications). In addition, the student will study the process approach by looking at leadership as a process of influencing an organization/group to achieve goals.

Upon successful completion of this course, students should be able to:

- Define the terms “leadership” and “influence” relative to emergency response.
- Identify the roles and responsibilities associated with leadership.
- Differentiate between leadership and ego.
- Identify the need for, and the role of, leadership in the incident management system.
- Define the team’s “teamwork” and “cooperation” relative to leadership and influence in emergency response.
- Identify the consequences of poor or ineffective leadership in an emergency.
- Recognize what it takes to be influential and the need for influence in certain circumstances.
- Describe how leadership can influence people, their response to activities, their safety and their future leadership styles.

3 Credits 2 Weekly Lecture Hours 1 Weekly Laboratory Hours

EMER 130 Search and Rescue

This course will provide the student with the knowledge concerning the general responsibilities, skills, abilities and the equipment needed by those involved in search and rescue efforts. The course also provides the student with practical exercises and search missions where they are required to utilize the proper equipment. The contents of the course include topics in three major areas: survival, support, and search and rescue. Additionally, the student is provided with an excellent opportunity to discuss and investigate the role of search and rescue in relation to incident management as well as the roles and responsibilities of search and rescue leaders. Students will learn from the experiences of others to sharpen their understanding and skills relative to search and rescue.

Upon successful completion of this course, students should be able to:

- Define the components of search and rescue operations and resources.
- List the major responsibilities for search and rescue.
- Describe the components of Incident Command System (ICS) and their functions.
- Differentiate between at least three types of maps used in search and rescue.
- Identify the use of topographical maps.
- Define the plotting methods or grid systems.
- Describe the parts of the compass.
- Utilize a compass.
- Define the six crucial steps in search and rescue management.
- Differentiate between the two basic categories of search tactics (Passive and Active).
- Describe the primary types of active search tactics.
- Describe the techniques and methods used by searchers.
- List searching or tactical skills needed by field searchers.
- Explain why knowledge of lost person behavior can be an advantage to the searcher.

3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

EMER 140 Emergency Management Seminar

This course will provide the student with a forum for discussion of the basic need for emergency management, emergency planning and incident management. This course will also overview the roles and responsibilities of the Incident Safety Officer in preparation for a series of response drills to implement student knowledge in these areas. In addition, a functional exercise will be conducted to test the course outcomes and competencies. Upon successful completion of this course, students should be able to:

- Understand the application of the various roles and responsibilities in incident management.
- Identify the roles and responsibilities associated with incident management.
- Identify the difference between Incident Command and Unified Command.
- Define the roles of various functionaries in the incident management system.
- Define the terms “teamwork” and “cooperation” in incident management.
- Evaluate hazards and risks associated with emergency response operations.
- Correct hazardous conditions associated with emergency response operations.
- Identify and correct unsafe acts that are observed during functional exercises as they apply to recognized standards provided by fire, police, medical and hazardous materials regulations.
- Develop a plan of action to reduce or alleviate hazards.
- Implement a plan of action to reduce or alleviate hazards.

1 Credit 1 Weekly Lecture Hours

EMS 100 Emergency Medical Technician

This intensive program is designed to instruct the pre-hospital care provider in the skills necessary to reduce mortality and morbidity from accident and illness. Topics covered include patient assessment, cardiopulmonary resuscitation, mechanical aids to ventilation, trauma management, head, neck and spinal injuries, fractures, medical and environmental emergencies, crisis intervention and vehicle rescue.

Upon successful completion of this course, students should be able to:

- Control hazards present to self, victim and bystanders at the scene of a pre-hospital medical emergency situation.
- Assess extent of injury to victims suffering pre-hospital accident or illness.
- Recognize and provide appropriate emergency care to victims suffering cardiac arrest and/or airway obstruction.
- Assess and provide adequate emergency care to victims suffering trauma to one or more body systems
- Communicate patient care information in an effective professional manner both verbally and in writing.
- Assess cardiac, respiratory, diabetic and associated medical and environmental emergencies.
- Evaluate obstetrical emergencies and provide appropriate assistance and/or emergency intervention to the expectant female.

Prerequisite: MAT 040-Basic Mathematics and REA 050 – Reading II

7 Credits 5 Weekly Lecture Hours 4 Weekly Laboratory Hours

EMS 110 Patient Assessment

This course is designed to provide the student with theory, concepts and the applications necessary to measure the pre-hospital scene and its surroundings, which will provide valuable information to the paramedic. Additionally, the student will be able to prioritize care based on patient assessment, which includes body substance isolation, scene safety, recognition and stabilization of life-threatening conditions, identification of patients who require rapid stabilization and transportation for definitive care.

Upon successful completion of this course, students should be able to:

- Identify the components of patient assessment and examination.
- Identify life-threatening conditions.
- Outline effective patient communication techniques.
- Apply interventions as identified during patient assessment.
- Identify priorities of management of the medical and traumatic patient.
- Effectively provide current and on-going patient care.
- Recognize changes in assessment and apply appropriate interventions as indicated.

3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

EMS 120 Airway Management and Ventilation

This course is designed to provide the student with theory and concepts of the anatomy and physiology of the respiratory system. The course will examine the mechanics of respiration, gases, regulation of respiration, foreign body airway obstructions and airway evaluation. In addition, the student will study the essential parameters of airway evaluation, airway management, and airway procedures.

Upon successful completion of this course, students should be able to:

- Discuss the assessment and management of the respiratory system.
- Identify the anatomy and physiology of the respiratory system.
- Describe variations in assessment and management of the respiratory system.
- Outline the mechanics of the respiratory system.
- Describe the regulation of the respiratory system.
- Describe devices and techniques in the management of the respiratory patient.
- Describe conditions and complications associated with the respiratory system.
EMS 136 Special Considerations - Assessment Based Management Seminar

This course is designed to prepare the student to perform and manage an effective assessment of the patient care. Topics such as integrating pathophysiological principles, physical examination findings, formulating a field impression and implementing treatment for the patient with common complaints will be thoroughly discussed. Additionally, the student will be exposed to the appropriate procedures to gather, evaluate and synthesize information as well as make appropriate decisions based on that information and take the necessary action for patient care.

Upon successful completion of this course, students should be able to:

• Discuss how assessment-based management contributes to effective patient and scene assessment.
• Describe how assessment and decision making in the pre-hospital setting affects patient care.
• Outline effective techniques for scene and patient assessment and care of patient assessment and personnel management.
• Identify essential equipment necessary for personnel.
• Outline strategies for patient approach that promote an effective patient encounter.
• Discuss techniques that permit efficient and accurate presentation of the patient.

3 Credits 2 Weekly Lecture Hours 1 Weekly Laboratory Hours

EMS 140 Trauma Systems and Mechanism of Injury

This course is designed to provide the student with the knowledge and skills to recognize the mechanisms of injury, trauma systems, patient assessment and emergency care. The course will also cover, in detail, the importance of the length of time that elapses between the incident and definitive care. Additionally, the course addresses the major roles in death reduction in three periods of trauma: through community education, scene interventions, and rapid response. Trauma systems, appreciation of comprehensive trauma systems, blunt trauma, and penetrating trauma will be thoroughly discussed.

Upon successful completion of this course, students should be able to:

• Describe the incidence and scope of traumatic injuries and deaths.
• Identify the role of each component of the trauma system.
• Predict injury patterns based upon knowledge of the laws of physics related to forces involved in trauma.
• Describe injury patterns that should be suspected when injury occurs from blunt trauma.
• Describe the role of restraints in injury prevention and in injury patterns.

5 Credits 3 Weekly Lecture Hours 4 Weekly Laboratory Hours

EMS 202 Emergency Medical Management of Patients Contaminated by Hazardous Materials

This course will provide the students with the information necessary to assess and properly manage the threats to self, co-workers and patients posed by victims contaminated by hazardous materials. Recognition and identification of the hazardous materials posing the threat will be stressed. In addition, steps necessary to comply with consensus and regulatory standards such as OSHA 1910.120 and JCAHO are presented.

Upon successful completion of this course, students should be able to:

• Describe the means by which the hazardous materials contaminating the victim may be identified.
• Employ reference manuals and sources to determine an appropriate pre-hospital medical protocol for initiating patient care.
• Demonstrate contamination reduction practices necessary to protect emergency response staff.
• Demonstrate appropriate procedures for decontaminating the victim prior to initiating patient care.
• Demonstrate ability to select and utilize appropriate hazardous materials personal protective equipment.
• Describe record keeping procedures necessary to establish an OSHA-required hazardous materials exposure file for each responder exposed to the hazardous material.

1 Credit

EMS 203 Introduction to Advanced Life Support I

This course is designed to provide the student with the necessary knowledge of the roles and responsibilities of advanced life support systems and procedures. Topics such as medical/legal ethics, drug information, the cardiovascular system, and proper medication administration will be presented. Experiments and case studies will be presented during this course.

Upon successful completion of this course, students should be able to:

• Define the roles and responsibilities of the paramedic in the Emergency Medical Service (EMS) system as they relate to history, system development, education, research, and continuous quality improvement.
• Describe the individual’s role in providing emergency patient care.
• Outline the individual’s role in promoting community health education, wellness, and prevention.
• Identify professional, ethical, legal, and moral accountability issues and situations.
• Identify the proper use and administration of drugs for various body systems.

Pre-requisite: BIO 150 – Human Anatomy and Physiology I, Certification as a current Emergency Medical Technician

4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

EMS 205 Introduction to Advanced Life Support II

This course is a continuation of Introduction to Advanced Life Support I and is designed to stress practices applicable to the paramedic practitioner. Emphasis will be placed on medication application, pharmacology and therapeutic concepts and practices. Various approaches are covered to ensure that the student receives broad exposure to all areas required for the paramedic practitioner. Experiments and case studies will be presented during this course.

Upon successful completion of this course, students should be able to:

• Identify the components of human anatomy and physiology as they relate to care for the sick or injured.
• Explain pharmacological characteristics, mathematical principles and purpose in administering pharmacological agents.
• Identify communication strategies necessary to collect information, interview and assess patients.

Pre-requisite: EMS 203

2 Credits 1 Weekly Lecture Hours 2 Weekly Laboratory Hours

EMS 210 Medical Emergencies I

This course is designed to prepare the paramedic student to manage numerous types of medical emergencies. Topics including the etiology and epidemiology of cardiopulmonary diseases and conditions will be discussed as well as the means to identify and describe the function of the cardiopulmonary system.

Upon successful completion of this course, students should be able to:

• Identify the risk factors and prevention education of cardiovascular disease processes.
• Distinguish pathophysiology of respiratory emergencies related to ventilation, diffusion, and perfusion.
• Assess causes, complications, and conditions of the cardiopulmonary system.
• Describe the anatomy and physiology of the cardiopulmonary system.
• Identify the electrophysiology of the cardiac system.
• Describe cardiovascular disease processes.
• Distinguish among varied techniques in managing cardiac and pulmonary emergencies.
• Apply emergency intervention on patients suffering from cardiopulmonary conditions.
• Describe anatomy and physiology of the nervous system.
• Identify disorders of the nervous, endocrine, and gastrointestinal systems.
• Identify neurological disorders.
• Describe causative agents and the pathophysiology of ingested poisons.
• Assess acute abdominal pain. Specify disorders of the endocrine system.
• Describe the anatomy and physiology of the endocrine glands that assist in the maintenance of homeostasis.
• Describe the antigen antibody response.
• Describe signs and symptoms and management of allergic reactions.
• Describe signs and symptoms, complications, and pre-hospital management of gastrointestinal disorders.

Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

EMS 211 Medical Emergencies II

This course is a continuation of Medical Emergencies I, and it is designed to provide the student with additional information necessary to effectively perform in medical emergency situations. Emergencies pertaining to neurology, endocrinology, allergies and anaphylaxis, gastroenterology, urology, and toxicology will be discussed. In addition, topics include, but are not limited to, hematology, environmental conditions, and behavioral disorders.
Upon successful completion of this course, students should be able to:

- Distinguish between poisoning by ingestion, inhalation, and injection.
- Recognize conditions relating to drug and alcohol abuse.
- Identify key components and normal functions of the urinary system.
- Describe detailed pathophysiology and assessment of urinary system disorders.
- Identify abdominal and genitalourinary disorders, acute abdominal pain, and systemic illnesses.
- Apply management and treatment priorities for toxic syndromes.
- Discuss the pathophysiology of blood and hematological disorders.
- Apply the theory of thermoregulation to various patient presentations.
- Distinguish among the recognition, transmission, and pathophysiology of infectious diseases.
- Discuss the individual's (student paramedic) role in the prevention of disease transmission.
- Discuss the critical principles of behavior emergencies.
- Identify potential causes of behavioral and psychiatric illnesses.
- Distinguish varied methods of approaching violent and non-violent patients (adult or child).
- Describe the physiologic process of menstruation and ovulation.
- Describe the structure and function of processes during pregnancy.
- Describe detailed assessment and management of obstetrical and gynecological emergencies.

**EMS 220 Concepts and Practices I**

This course is designed for the student who is prepared to participate in clinical experiences which should occur after the student has demonstrated competence in skills and knowledge in the didactic and laboratory components of the program. The student will have the opportunity to achieve proficiency by performing skills on actual patients in a clinical setting. Alternative learning experiences (simulations, programmed patient scenarios, etc.) will be developed. Proficiency in performing all steps and procedures safely and properly will be thoroughly discussed.

Upon successful completion of this course, students should be able to:

- Demonstrate safe practices in the pre-hospital environment.
- Demonstrate the ability to serve as a team leader in a variety of pre-hospital emergency responses.
- Recognize the need for advanced life support interventions.
- Demonstrate the proper application and performance of basic life support skills.
- Demonstrate proper performance of advanced life support procedures and skills.
- Apply the appropriate advanced life support skills in an emergency situation.

**EMS 221 Concepts and Practices II**

This course is a continuation of Paramedic Concepts and Practices I and will incorporate the skills and practices that each student would need to accomplish during the in-hospital and field time clinical sessions. The clinical document outlines the specific encounters with the patient that each student must successfully achieve during clinical and hospital sessions. In addition, topics such as intravenous medication bolus through intravenous line, communicating, relaying patient information, and trauma will be discussed, as well as numerous miscellaneous procedures.

Upon successful completion of this course, students should be able to:

- Perform a comprehensive identification and assessment and management of a variety of advanced life support patients in the in-hospital and pre-hospital settings.
- Demonstrate knowledge of communication systems for reporting patient care and interventions.
- Demonstrate appropriate patient communication techniques.
- Document all patient assessments and advanced life support interventions accurately.
- Maintain equipment and vehicles in a ready state of response for all types of emergency conditions.

**ENG 025 Basic & Essential Writing**

This course is designed for students who have knowledge of sentence structure. The purpose of this course is to develop writing skills. Students will start with a focus on writing clear, Standard English sentences with appropriate use of grammar, punctuation, and spelling and will progress to writing shorter paragraphs.

Upon successful completion of this course, students should be able to:

- Comprehend verbal and written directions.
- Identify the parts of speech.
- Analyze the structure of sentences.
- Construct simple and compound sentences with appropriate usage, punctuation and spelling.
- Demonstrate improvement in written vocabulary.
- Brainstorm effectively.
- Recognize and correct common errors in usage, punctuation, and sentence structure.
- Analyze the structure of a paragraph.
- Outline and write a short paragraph with a main idea and supporting details.
- Combine simple sentences correctly.

**ENG 050 Developmental English**

Comprehensive review and writing practice in the fundamentals of English grammar, work choice, punctuation, and paragraph construction. Students may test out of this course at any time in accord with College policy and with the agreement of their instructor. Credits from the course are not applicable toward a degree.

Upon successful completion of this course, students should be able to:

- Write a paragraph of substantial length.
- Identify a sufficiently limited topic.
- Include a topic sentence containing an appropriately limited subject and controlling idea.
- Demonstrate clear awareness of purpose by using an appropriate paragraph pattern.
- Integrate a body of relevant and specific details with a consistent point of view, effective transitions, and a concluding sentence - all elements working to keep the paragraph clearly focused on the topic.
- Apply conventional punctuation, capitalization, spelling and grammar practices regularly enough so as not to frustrate readers or repeatedly distract them from the content of the paragraph.
- Employ a range of sentence variety relevant to audience and purpose.
- Understand that writing is a process and is able to identify and use steps in the process to produce successful paragraphs.
- Recognize the multi-paragraph essay format and understands its similarities to single paragraph writing.

**ENG 090 English Composition I**

This course reviews the principles of composition, including rhetoric, grammar and usage, and emphasizes the writing of analytical essays and the study of principles underlying critical thinking.

Upon successful completion of this course, students should be able to:

- Demonstrate effective writing strategies after reading and assessing a variety of texts.
- Write assignments that consider various writing situations in terms of audience, purpose, tone, organization, format, style, point of view, and diction.
- Generate ideas, limit a topic, and formulate a thesis utilizing prewriting techniques.
- Provide specific, concrete details to support the thesis.
- Organize essays using appropriate types of development such as description, narration, definition, comparison/contrast, causal relationship, classification, example, process analysis, and argumentation.
- Compose an original, unified, multi-paragraph essay with introduction, conclusion, and transitions.
- Revise, edit, and proofread writing to produce final drafts with a minimum of errors in grammar, mechanics, and diction.
- Access and evaluate source material using current information literacy techniques.
- Summarize, paraphrase, and quote source material using MLA documentation.
- Prepare a documented essay free of plagiarism.

**ENG 100 English Composition II**

Composition II is a writing course with emphasis on both literature and research. The course develops critical thinking through the study of literature, the use of advanced research techniques, and the writing of analytical/critical and researched essays. Upon successful completion of this course, students should be able to:

- Formulate an analytical/argumentative thesis.
- Express ideas logically and clearly in a coherent essay with sound, supportive data.
- Compose original, analytical/critical essays in response to literature.
- Analyze the short story, poetry and drama using the elements of literature such as plot, setting, character, point of view, form, tone, style, symbolism, and theme, from different critical perspectives.
- Access and evaluate source material using current information literacy techniques.
- Summarize, paraphrase, and quote source material using MLA documentation.
- Apply research skills by composing a multi-source paper that proves a scholarly thesis and is free of plagiarism.
- Revise, edit, and proofread to produce polished, final drafts with a minimum of errors in grammar, mechanics and diction.

Prereq: ENG 100

**ENG 112 English Composition II**

Composition II is a writing course with emphasis on both literature and research. The course develops critical thinking through the study of literature, the use of advanced research techniques, and the writing of analytical/critical and researched essays. Upon successful completion of this course, students should be able to:

- Formulate an analytical/argumentative thesis.
- Express ideas logically and clearly in a coherent essay with sound, supportive data.
- Compose original, analytical/critical essays in response to literature.
- Analyze the short story, poetry and drama using the elements of literature such as plot, setting, character, point of view, form, tone, style, symbolism, and theme, from different critical perspectives.
- Access and evaluate source material using current information literacy techniques.
- Summarize, paraphrase, and quote source material using MLA documentation.
- Apply research skills by composing a multi-source paper that proves a scholarly thesis and is free of plagiarism.
- Revise, edit, and proofread to produce polished, final drafts with a minimum of errors in grammar, mechanics and diction.

Prereq: ENG 100
ENG 130  Fundamentals of Journalism I
This is a writing-intensive course designed for students contemplating a career in journalism. The course will focus on the principles and techniques of journalism with an emphasis on the print media, primarily weekly and daily newspapers. Topics include the nature of news, news gathering techniques, news reporting, digital journalism, ethics of journalism and journalism law.
Upon successful completion of the course, the student should be able to:
- Define "news."
- Discuss the impact of electronic media on print media.
- Explain the organization and hierarchy of a typical newspaper.
- Define newspaper terms.
- Interview sources.
- Write a lead.
- Write news and feature copy according to AP Style.
- Create a blog.
- Explain journalism law with respect to libel and invasion of privacy.
- Identify and summarize three ethical philosophies pertaining to journalism.
PreReq: ENG 100
3 Credits 3 Weekly Lecture Hours

ENG 131  Fundamentals of Journalism II
This writing intensive course is designed for students contemplating a career in journalism, public relations or advertising. Students will continue to practice news gathering and writing techniques learned in Fundamentals of Journalism I (ENG 130) as well as techniques in copy editing. While doing so, students will assist in the writing, editing and production of the campus newspaper. Students will also learn to write copy for public relations, advertising and broadcast media.
Upon successful completion of the course, students should be able to:
- Write and edit news and feature stories according to AP Style.
- Edit news and feature stories using copy-editing symbols.
- Submit articles electronically to an editor.
- Write broadcast copy.
- Write advertising copy.
- Write a news release.
- Create a press kit for a public relations event.
PreReq: ENG 130
3 Credits 3 Weekly Lecture Hours

ENG 205  Creative Writing
Students' written submissions will serve as an experiential means for reinforcing the theory of critical principles described and illustrated in Composition II. Through the written planning of submission, through modifications of planning in response to editorial direction, and through written analysis of their own completed works, students will find that "inspiration" is only the beginning of creative writing. Students' discussion of submissions in the classroom workshop will evaluate how well a work coincides with its author's separately submitted analysis, thus emphasizing the value of judging a work on its individual terms rather than by conventional expectation.
Upon successful completion of this course, students should be able to:
- Reinforce the theory of critical principles of Composition II.
- Students learn written planning of submissions.
- How to modify planning by virtue of editorial direction.
- Analyze in writing their own completed works.
- Learn to judge a work on individual terms.
PreReq: ENG 112
3 Credits 3 Weekly Lecture Hours

ENG 206  Creative Writing: Non-Fiction and Memoirs Special Studies
This is a workshop-intensive course in which students will examine various elements that help writers produce effective works of nonfiction. The workshops are an integral part of any creative writing course, and they are designed to provide students with critical and constructive feedback that will help them move from the planning stage through the revision process. Therefore, the major focus will be student submissions; students will read, analyze and critique classmates' submissions. In addition to writing their own works, students will read a wide range of published nonfiction and should have a basic understanding of the various modes within the genre.
Upon successful completion of this course, students should be able to:
- Recognize the literary elements of (creative) nonfiction, including narrative, theme, structure, style, voice, argument, dialogue, reportage, research, etc.
- Create works of nonfiction that demonstrate the ability to apply factual material within a creative framework
- Analyze and evaluate prose in order to discern the literary elements which produce the most success in prose
- Synthesize criticism and analysis to create dynamic and provocative works of nonfiction
Prerequisite: ENG 205 or permission of instructor
3 Credits 3 Weekly Lecture Hours

ENG 207  Creative Writing: An Introduction to Playwriting Special Studies
This course introduces students to the concepts of dramatic writing, with an emphasis on character and structure. The course is intended to provide the student with practical experience in the creative process of composing stage-worthy plays.
Upon successful completion of this course, students should be able to:
- Describe and discuss the work of important playwrights in terms of structure, dramatic arc, central metaphors and symbols, physicality, and dialogue.
- Describe the standard format of play.
- Research ideas for use in plays.
- Formulate different dramatic ideas.
- Create dialogue, characters, and relationships intended for the stage.
- Compose and revise plays.
- Share work with fellow writers with the intent of listening to feedback and potentially incorporating the ideas of others into the work.
- Work with actors to refine dialogue.
- Use physical-mental exercises to inspire and sustain dramatic writing.
PreReq: ENG 112 or instructor's permission
3 Credits 3 Weekly Lecture Hours

ENG 208  Creative Writing II: Short Story Special Studies
This is a workshop-intensive course in which students will examine various elements that help writers produce effective works of fiction. The workshops are an integral part of any creative writing course, and they are designed to provide students with critical and constructive feedback that will help them move from the planning stage through the revision process. Therefore, the major focus will be student submissions; each week, students will read, analyze and critique classmates' submissions - a process which will help yield proficiency and understanding of form, vivid imagery, and compelling use of language and wordplay.
Upon successful completion of this course, students should be able to:
- Recognize and understand the elements necessary to build effective poems, including; music and sound, figurative language, persona and voice, imagery, theme and tone.
- Compose poems that demonstrate the ability to purposefully utilize language in a cohesive lyric or narrative structure.
- Analyze and evaluate poetic techniques and elements in order to discern which produce the most successful verse in a given context or purpose.
- Synthesize criticism and analysis to create dynamic and effective poetic works.
Prerequisite: ENG 205
3 Credits 3 Weekly Lecture Hours

ENG 209  Creative Writing: Poetry
This is a workshop-intensive course in which students will examine various elements that help writers produce effective works of poetry. The workshops are an integral part of any creative writing course, and they are designed to provide students with critical and constructive feedback that will help them move from the planning stage through the revision process. Therefore, the major focus will be student submissions; each week, students will read, analyze and critique classmates' submissions - a process which will help yield proficiency and understanding of form, vivid imagery, and compelling use of language and wordplay.
Upon successful completion of this course, students should be able to:
- Recognize and understand the elements necessary to build effective poems, including; music and sound, figurative language, persona and voice, imagery, theme and tone.
- Compose poems that demonstrate the ability to purposefully utilize language in a cohesive lyric or narrative structure.
- Analyze and evaluate poetic techniques and elements in order to discern which produce the most successful verse in a given context or purpose.
- Synthesize criticism and analysis to create dynamic and effective poetic works.
Prerequisite: ENG 205
3 Credits 3 Weekly Lecture Hours

ENG 210  Travel Writing Special Studies
The course will focus on the fundamentals of travel writing with an emphasis on reporting techniques, such as observation, interviewing, research and basic digital photography. Topics will include an analysis of popular travel writers’ publications; the importance of exploring stories ‘off the beaten path’; the art of storytelling; and an exploration of the print and online travel writing industry.
Upon successful completion of the course, students should be able to:
- Recognize the literary style of successful travel writers.
- Develop original ideas for travel articles that will engage their audience.
- Gather information, using observation, interviewing and research strategies.
- Use description, narration, dialogue and personal reflection to create lively prose.
- Identify potential markets for selling or publishing their work.
- Upload their articles and photographs onto a travel blog.
PreReq: ENG 100
3 Credits 3 Weekly Lecture Hours

ENG 214  Women in Literature
Women in Literature is a course that allows students to look at women as they are perceived by others and as they perceive themselves. Through literary creations supplemented by films, speakers, articles and anecdotal contributions from students, we will look at women from a variety of ethnic, social and racial groups, including but not limited to African Americans, Asian Americans, Chicanos and Native Americans. As part of the study of literature by and about women in our world, students will also consider some of the historical, political, economic and religious realities that have shaped and continue to shape our perceptions of women.
Upon successful completion of this course, students should be able to:
- Discuss the roles of women reflected in selected literature.
- Construct a series of response essays that demonstrate a critical analysis of the literature under discussion.
- Demonstrate research and documentation skills through the exploration of a selected topic.
- Explain the roles of women in literature in terms of economic, political and social issues.
- Identify literary contributions by women of color who traditionally have had no "voice," such as African American, Asian American, Chicano and Native American writers.
- Analyze the literary elements of the works studied.

Prereq. ENG 100

3 Credits  3 Weekly Lecture Hours

ENG 215  Mystery Literature

This course includes conventional detective stories and novels, short stories, films and plays not often analyzed as mysteries. An introduction to logic will be presented, and writers' use of induction and deduction will be studied. Later forms of detection such as the "hard-boiled" and psychological schools will be placed into the chronology of the genre. The major focus, however, will be on literary elements of each story: each will be evaluated as to narrative stance and structure, methods of characterization, theme and literary devices.

Through reading and analyzing the function of mystery, students should be able to:
- Recognize the logical processes of each work.
- Discuss literary elements such as characterization, theme, narrative stance and symbolism.
- Learn to distinguish essential from non-essential facts in a narrative.
- Write documented papers demonstrating an ability to reach logical conclusions based on given facts.
- Analyze recurring themes in this fiction, such as "poetic justice," criminal motivation and the notion of order in society.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 216  Science Fiction Literature

Metaphorically, this course is a journey into the strange and at times terrifying possibilities of societies in which technology is out of control. In a sense all of the readings are works of future shock-speculative fiction in which we are presented with a reality we cannot accept and at times terrifying possibilities of societies in which technology is out of control. In a sense all of the readings are works of future shock-speculative fiction in which we are presented with a reality we cannot accept.

Upon successful completion of this course, students should be able to:
- Comment knowledgeably about the literary and popular culture contexts of the readings.
- Identify and comment on the typical devices of dystopian writers (particularly satire, burlesque, caricature and farce).
- Relate these devices to such dystopian themes as conformity vs. individualism, humanistic vs. technological goals.
- Recognize and comment critically on the political, utilitarian and totalitarian abuses of language in dystopian societies.
- Apply research and outlining skills in a project to be presented orally.

Prereq. ENG 100

3 Credits  3 Weekly Lecture Hours

ENG 220  British Literature to 1800

This is a survey of English literature from the beginnings to the pre-romantics. The emphasis is on the major works and writers.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 221  British Literature to Modern

This is a survey of English literature from the romantics to the moderns. The emphasis will be on the major works of major writers.

Upon successful completion of the course, students should be able to:
- Identify historical and cultural characteristics of each of the literary periods.
- Identify literary devices such as image, symbol, irony, conceits, figurative language and stream of consciousness.
- Trace some ideas through works of each period; i.e., the concept of warrior, of woman, of faith.
- Analyze literary form such as allegory, sonnet, lyric, satire, short story.
- Develop a precise thesis about a particular work.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 222  Introduction to Shakespeare

This course is a study of representative Shakespearean plays set against the literary, political and social setting that spawned them. Attention is paid to Shakespeare's influence not only in the development of the drama, but also in the literary tradition of the English-speaking world.

Upon successful completion of this course, students should be able to:
- Identify selected plays as to type: comedy, history and tragedy.
- Reconstruct the written word and see each play as a dramatic production.
- Reconstruct the whole of the play: setting, atmosphere, action and character.
- Read and comprehend blank verse, specific Elizabethan idiom and allusions employed by Shakespeare.
- Analyze critically each play for its relationship between plot and philosophical or thematic base.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 225  Modern Chinese Literature Special Studies

This course will involve the study of representative Chinese literary works written from 1949 (the establishment of the People's Republic of China) to the present. Special attention will be given to the historical context of the literature in an effort to understand the interplay of politics, society, and literature in China.

Upon successful completion of this course students should be able to:
- Identify major characteristics of modern Chinese literature.
- Discuss the political influences on/of modern Chinese literature.
- Recognize major writers of modern Chinese literature.
- Analyze the influence of Western literary traditions on modern Chinese literature.
- Respond to the literature studied both orally and in documented essays.
- Recognize the contributions of modern Chinese literature to the world.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 230  American Literature - Shaping the Ideal

A survey of American literature from its colonial beginnings to 1865, with the emphasis on the study of major figures.

Upon successful completion of this course, students should be able to:
- Identify various characteristics of periods in American literature from colonial times to the Civil War.
- Identify various kinds of American literature.
- Indicate his/her interpretation of a poem or a passage from a poem in American literature of the period.
- Discuss some basic issues treated in the American essay, short story and novel.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 231  American Literature - Romanticism to Skepticism

This course, a continuation of American Literature: Shaping the Ideal, considers literature from 1865 to the postwar period.

Upon successful completion of this course, students should be able to:
- Identify various characteristics of post-Civil War American literature.
- Identify various socio-economic, historic and aesthetic influences on the authors and the writing of the period.
- Analyze a work in relation to those forces as well as offer an independent analysis of them.
- Discuss their intellectual or emotional response to a work of the period.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 240  World Literature I

The selective study of great representative literary works of the world from antiquity to modern times with emphasis on their social, cultural and intellectual backgrounds. Special attention is given to the literature of continental Europe, Asia and Africa.

Upon successful completion of this course, students should be able to:
- Identify the major historical characteristics of the three periods covered (ancient world, the medieval period and the Renaissance).
- List literary form and content that lets us differentiate among the three periods.
- Discuss (both orally and in writing) examples of literature in each period.
- Discuss the influence of early periods on later ones.
- Compare and contrast the characteristics of the three periods.

Prereq. ENG 112

3 Credits  3 Weekly Lecture Hours

ENG 241  World Literature II

Continues the balanced, selective study of great representative literary works of the world from the Renaissance to the present day in their geographical, historical, economic, political and sociological contexts. The "emerging" literatures-works by women, colonialists, post-colonials and those groups generally denied a voice-are studied in an attempt to enlarge the canon and render it inclusive.

Upon successful completion of this course, students should be able to:
- Identify the major writers and literary influences of the cultures studied.
• Identify dominant themes/concerns in the established and emerging literatures.
• Recognize the identifying characteristics of the literature of each culture as well as the universals evident in all literatures.
• Demonstrate an awareness of the struggle of writers of the emerging literatures to find a voice, an audience and a hearing.
• Articulate their responses to the cultures and writers encountered in the form of analytical/argumentative, researched and documented essays.

Prereq. ENG 112
3 Credits 3 Weekly Lecture Hours

ENG 242  Bible As Literature
To survey the development and content of the Bible, this course of study includes the historical context and literary style.

Upon successful completion of this course, students should be able to:
• Identify and describe the literary style of the Books of the Bible.
• Distinguish the various themes in the Bible.
• Describe the historical and social context of the material.
• Describe the development of the canon.
• Answer comprehensive questions on biblical context.
• Write a paper using the historical critical method.

Prereq. ENG 112
3 Credits 3 Weekly Lecture Hours

ENG 243  Topics in Contemporary Literature
Selected topics and themes from the literature of recent decades, including recent developments in the drama, current movements in modern poetry and the fiction of today.

Upon successful completion of this course, students should be able to:
• Identify various motifs found in modern literature such as wasteland image, fantasy, myth and alienation.
• Discuss such concepts as existentialism, idealism and expressionism as found in modern literature.
• Identify socio-economic and historical influences on the writers.
• Interpret the works according to the writer’s intellectual and emotional response to them.
• Analyze literature in one or more critical research papers.

Prereq. ENG 112
3 Credits 3 Weekly Lecture Hours

ENG 245  Black American Literature
This course is a comprehensive survey of the writings of African Americans beginning with the 18th century through the present. By way of reading, lecture and discussion, students analyze the various genres, topics, mores and traditions identified with African Americans, their historical and cultural significance.

Upon successful completion of this course, students should be able to:
• Discuss the roles of African Americans in the larger culture as reflected in selected literature.
• Trace historical developments among Blacks in America from their African roots through slavery, the Civil War and the industrialized 20th century.
• Analyze literary elements of the works studied.
• Discuss the origins of racial stereotypes, discrimination and segregation as they appear in selected works.
• Write an essay discussing the aforementioned topics.

Prereq. ENG 100
3 Credits 3 Weekly Lecture Hours

ENG 250  Children’s Literature
This course is a critical and analytical study of a variety of texts that represent the many genres of children’s literature. It will emphasize how children are influenced by literature and how children’s literature reflects the values of the particular culture that produces it. Upon successful completion of this course, students should be able to:
• Recognize the characteristics of the different genres of children’s literature.
• Determine and apply criteria for what may be considered as quality children’s literature.
• Analyze literary elements such as theme, character, and setting.
• Evaluate the contributions that illustrations can make to a text.
• Identify literature as a product of a particular cultural climate.
• Discuss critically issues of gender, ethnicity, culture, and the individual that are present in the texts.
• Design and research a written project that relates to a student’s particular interest in children’s literature.

Prereq. ENG 112
3 Credits 3 Weekly Lecture Hours

(ESL) Eng as a Second Language

ESL 023  Elementary Grammar
This is a high beginning multi-skills course to practice and learn grammar in listening, speaking, reading and writing for everyday life and in college. Students must take this course with other ESL skills courses in writing (ESL 024), reading (ESL 025) and listening/speaking (ESL 026).

Upon successful completion of the course, students should be able to:
• Use the simple present, past and future tenses of regular and irregular verbs.
• Use with some accuracy prepositions of time, place, and connectors.
• Produce and use sentences with if, when, after, before, because and while with correct verb tenses.
• Use models of ability, request and necessity.
• Use with some accuracy prepositions of time, place, pronouns and count/non-count nouns.
• Use with some accuracy comparisons and superlatives.
• Learn and use language confidently and appropriately.

Prereq. Placement Test
3 Credits 3 Weekly Lecture Hours

ESL 024  Elementary Writing
This course is for advanced beginners who can write basic sentences and have some knowledge of English sentence structure. The course covers basic grammatical structures and introduces students to simple paragraph writing as well as other types of writing needed in everyday life.

Upon successful completion of the course, students should be able to:
• Write simple, clear sentences with correct capitalization and punctuation.
• Write simple forms of compound and complex sentences with appropriate linking words.
• Write unified paragraphs of 8 to 10 sentences about people, places and events.
• Collect and organize information for use in sentence writing.
• Recognize and identify the basic parts of speech in writing using the correct dictionary abbreviations.
• Use the basic verb tenses to indicate present, past and future time.
• Use the common models and prepositions of time and location correctly.
• Develop some skill in recognizing and correcting common writing errors.
• Show improved ability to use correct word endings and articles.

Prereq. Placement Test
4 Credits 3 Weekly Lecture Hours

ESL 025  Elementary Reading
This advanced-beginner course is designed to develop students’ ability to use reading strategies and to expand vocabulary in order to understand simplified texts. Students will normally take this course with Elementary Writing (ESL 024) and Elementary Speaking/Listening (ESL 026). Two hours per week of tutoring are required. In the course, students should be able to:
• Read text appropriate for this level.
• Respond to questions and organize information from readings into simple outlines and grids.
• Find main ideas, topic sentences and details.
• Predict content by asking questions before reading.
• Use strategies to infer the meaning of vocabulary, decode difficult sentences, and interpret punctuation and connectors.
• Skill and scan for information.
• Expand vocabulary.
• Use an English-English dictionary for ESL learners.

Prereq. Placement Test
4 Credits 3 Weekly Lecture Hours

ESL 026  Elementary Listening/Speaking
This is a course for advanced beginners who have some basic knowledge of English and some functional communicative ability (e.g., simple questions and answers on topics of everyday interest). Class time is devoted to speaking for everyday needs, grammar practice, pronunciation, intensive listening to short, simplified narratives and listening for specific information in extended narratives and conversations.

Students normally take this course along with Elementary Writing (ESL 024) and Elementary Reading (ESL 025). The course also has two hours of lab time, which will provide students with additional listening practice.

Upon successful completion of the course, students should be able to:
• Ask and answer questions about their own life situations.
• Use courtesy in various everyday situations.
• Describe or narrate an event using two or more sentences.
• Learn the sound system of English, and practice pronunciation and intonation.
• Develop listening strategies to understand information necessary for everyday life (e.g., weather forecasts).
• Underst and simplified, extended narratives (e.g., lectures and dialogues).

Prereq. Placement Test
4 Credits 3 Weekly Lecture Hours

ESL 033  Intermediate Grammar I
This course is a continuation of Elementary Grammar (ESL 023). Students practice grammatical structures through reading, writing, speaking and listening tasks in a classroom setting. This course is helpful for students who are fluent in English, but who need to develop the accuracy that is necessary for success in college. The course is also recommended for new international students who may have memorized grammar rules, but cannot apply them in conversational or academic situations.
Upon successful completion of this course, students should be able to:
• Describe the threat caused by asteroids.
• Apply concepts describing climate and weather to
  understanding the environment.
• Discuss the causes of mass wasting, ground collapse,
  flooding, and beach erosion
• Explain the theory of Plate Tectonics and its role in
  preventing these disasters. The course is intended for non-
  major students interested in the earth sciences and how
  they relate to human activity. Upon successful completion
  of this course, students should be able to:
• Describe how damage from natural disasters can be
  predicted, avoided, or prevented by good decision-
  making.
• Explain the theory of Plate Tectonics and its role in
  explaining earthquakes, volcanoes, and tsunamis.
• Discuss the causes of mass wasting, ground collapse,
  flooding, and beach erosion.
• Apply concepts describing climate and weather to
  hurricanes, tornadoes, thunderstorms, and wildfires.
• Describe the threat caused by asteroids.
• Apply laboratory skills and computer technology to solve
  problems in a cooperative environment.

PreReq: ENG 050 and REA 050
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ESL 045 Intermediate Reading II
This course is designed for intermediate-level ESL students who need to
build their vocabulary and reading skills so that they can, with the assistance of a dictionary, understand the text that is written for native speakers. Students will normally take Intermediate Writing II (ESL 044) and Intermediate Speaking/Learning II (ESL 046) along with this course. In addition, two hours weekly of tutoring are required.

PreReq: ESL 023
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ESL 034 Intermediate Writing I
This course is a continuation of Elementary Writing (ESL 024). Students write longer paragraphs and short essays using more advanced writing strategies such as narration, illustration and analysis. Frequent in-class writing and out of class assignments help prepare students for future academic writing in non-ESL classes.

Upon successful completion of this course, students should be able to:
• Use strategies to detect and correct grammatical errors.
• Describe and illustrate different natural phenomena.
• Use an English-English dictionary for advanced ESL
  students.
• Expand vocabulary, knowledge of word forms and use of
  the passive voice.
• Discuss the content of readings and defend answers.
• Summarize and paraphrase, verbally and in writing,
  the information contained in the readings.
• Discuss the contexts of natural hazards and disasters. There is an
  emphasis on understanding, predicting, avoiding, and
  preventing these disasters. The course is intended for non-
  science majors interested in the earth sciences and how
  they relate to human activity. Upon successful completion
  of this course, students should be able to:
• Describe how damage from natural disasters can be
  predicted, avoided, or prevented by good decision-
  making.
• Explain the theory of Plate Tectonics and its role in
  describing earthquakes, volcanoes, and tsunamis.
• Discuss the causes of mass wasting, ground collapse,
  flooding, and beach erosion.
• Apply concepts describing climate and weather to
  hurricanes, tornadoes, thunderstorms, and wildfires.
• Describe the threat caused by asteroids.
• Apply laboratory skills and computer technology to solve
  problems in a cooperative environment.

PreReq: ESL 023
3 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ESL 035 Intermediate Reading I
In this course, students expand their reading skills and vocabulary. Students should take this course along with Intermediate Writing I (ESL 034) and Intermediate Speaking/Learning I (ESL 036). In addition, two hours of tutoring are required weekly.

Upon successful completion of this course, students should be able to:
• Read text appropriate for this level.
• Predict content, respond to questions, defend answers and
  restate the context of readings.
• Make inferences based on the readings.
• Infer the meaning of vocabulary, decode difficult
  sentences and interpret meaning.
• Recognize the organization and structure of readings.
• Scan for information in maps, charts, graphs, etc.
• Expand vocabulary and knowledge of word forms.
• Use an English-English dictionary for ESL students.

PreReq: ESL 025
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ESL 036 Intermediate Listening/Speaking I
This course is a speaking and listening course for low-intermediate ESL students. Students entering the course should be able to answer questions about their own lives, to expand a spontaneous narrative to three or four sentences.

Class time is devoted to speaking in various social situations, the practice of grammar, pronunciation and listening for information in conversations and extended narratives. Students normally take this course with Intermediate Writing I (ESL 034) and Intermediate Reading I (ESL 035). Two hours of lab time weekly give students additional listening comprehension practice.

Upon successful completion of the course, students should be able to:
• Use language functions appropriate for this level (e.g.,
  requesting information, agreeing, complimenting).
• Use language at different levels of politeness and
  formality.
• Give short talks on topics of interest.
• Learn and practice the pronunciation and intonation
  patterns of English.
• Comprehend simplified lectures on academic topics.
• Identity information in conversations and narratives.
• Learn and produce common reductions in English.

PreReq: ESL 026
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ESL 043 Intermediate Grammar II
This course is a continuation of Intermediate Grammar I (ESL 033). It is a multi-skills course in which students practice grammar in social and academic situations.

Upon successful completion of the course, students should be able to:
• Use with accuracy the past perfect and future perfect continuous tenses.
• Use with accuracy adverb, noun and adjective clauses.
• Use tools such as connectors, tense shifting and reference
  words in extended writing.
• Produce and use models with accuracy.
• Select appropriate grammatical constructions for different
  levels of formality.
• Use language confidently and appropriately.

PreReq: ESL 033
3 Credits 3 Weekly Lecture Hours

ESL 044 Intermediate Writing II
This course is designed for students who can write unified, well-supported paragraphs and short essays with few errors that affect readers’ comprehension.

Upon successful completion of the course, students should be able to:
• Gather and organize information and ideas required for
  essay writing.
• Write essays for a variety of purposes and audiences.
• Identify and produce writing assignments appropriate for
  specific audiences.
• Use a variety of complex sentences.
• Use pronouns and transitional devices to link ideas.
• Use unreal conditionals, noun clauses and other
  advanced structures for sentence variety and effect.
• Proofread and revise papers in response to instructors’
  peers’ comments.
• Demonstrate in a portfolio the academic writing skills
  required in non-ESL credit courses.

PreReq: ESL 024
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ESL 046 Intermediate Listening/Speaking II
This course emphasizes the comprehension and production of longer segments of speech. Students entering the course should be able to extend a narrative to several sentences. The class covers speaking in everyday situations, conventions of speaking in academic settings (e.g., participating in class discussions) and pronunciation. Students normally take this course with Intermediate Reading II (ESL 045) and Intermediate Writing II (ESL 044). An additional two hours each week of lab time will provide extra listening practice.

Upon successful completion of this course, students should be able to:
• Use different levels of politeness in a variety of situations.
• Speak spontaneously at an extended level of discourse.
• Organize and deliver a five to seven minute presentation.
• Contribute to group problem-solving discussions.
• Use listening strategies to understand the main points in
  longer narratives and conversation, some unsimplified.
• Take notes on extended narratives.
• Improve pronunciation and intonation.
• Demonstrate grammatical accuracy in most everyday
  conversational situations.

PreReq: ESL 036
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

(ESS) Earth & Space Science

ESS 100 Earth Science
This course is a general survey of the earth sciences of geology, meteorology, oceanography, and astronomy in the context of natural hazards and disasters. There is an emphasis on understanding, predicting, avoiding, and preventing these disasters. The course is intended for non-science majors interested in the earth sciences and how they relate to human activity. Upon successful completion of this course, students should be able to:
• Describe how damage from natural disasters can be
  predicted, avoided, or prevented by good decision-
  making.
• Explain the theory of Plate Tectonics and its role in
  describing earthquakes, volcanoes, and tsunamis.
• Discuss the causes of mass wasting, ground collapse,
  flooding, and beach erosion.
• Apply concepts describing climate and weather to
  hurricanes, tornadoes, thunderstorms, and wildfires.
• Describe the threat caused by asteroids.
• Apply laboratory skills and computer technology to solve
  problems in a cooperative environment.
ESS 102  Introduction to Astronomy
This course is designed to introduce students to the science of astronomy, its history, and its importance as an influence on our view of humankind. The course is intended for non-science majors. An optional laboratory course, ESS 103 Introduction to Astronomy Laboratory, is offered at night.

Upon successful completion of this course, students should be able to:
• Describe the night sky, the model used to represent it, and the motions of the sun, moon, and planets across it.
• Trace the history of astronomy and the individuals and ideas that have shaped our view of the universe.
• Describe the form in which information from the universe reaches astronomers, how the information is created, the tools used in astronomy to gather it, the concepts used to analyze it, and how the information is used to classify and study stars such as the sun.
• Describe the important properties of stars, the methods by which astronomers measure those properties, and discuss the theories relating to stellar birth and evolution.
• Describe the general characteristics of the solar system, the theories about its origin, how those theories are supported by observational evidence, and how the planets compare with one another in terms of their physical characteristics.
• Discuss the discovery and nature of the Milky Way Galaxy, the different types of galaxies, their creation, organization, distribution, and motions in space, and how galaxies are used to develop theories regarding the creation and evolution of the universe.
• Discuss the possibility of life existing elsewhere in the universe, what is presently known about the origins of life and suitable places for life to exist, and describe the observational evidence for or against life in the universe.

Prereq. ENG 050 and REA 050
4 Credits 3 Weekly Lecture Hours

ESS 103  Introduction to Astronomy Laboratory
This laboratory course introduces students to astronomical observations through the use of telescopes and star charts to study objects in the night sky. Practical indoor activities are designed to foster an understanding of how objects from great distances are studied from the earth. Observations of the night sky with telescopes and the unaided eye will be conducted. Students will explore the constellations, moon, planets, and other objects of our universe. The course is intended for non-science majors, and is an optional laboratory course to accompany ESS 102 Introduction to Astronomy.

Upon successful completion of this course, students should be able to:
• Identify stars, planets and constellations using the star charts.
• Demonstrate proper use of telescope by reference to star charts.
• Locate stellar objects with a telescope by reference to star charts.
• Observe, record and analyze data collected from students observations as well as from observations of astronomical observatories.
• Describe the nightly and annual motions of the moon, stars and planets.
• Locate current information in journals and astronomical literature in the library.
• Demonstrate the use of computer information systems such as internet to collect and study recent data on astronomical events.
• Describe several ways in which astronomers measure distance to stars.
• Develop skills that can be used in life-long learning to understand the composition of our universe.

Prereq. or Coreq. ESS 102
1 Credit 2 Weekly Laboratory Hours

ESS 110  Geology
This course is designed for Natural Science majors program although it will be appropriate for non-science majors as a laboratory science elective. The course provides an introduction to the study of the Earth, its composition, and the processes that shape it. The course will consider the various aspects of geology including earthquakes, volcanoes, surface and groundwater, rivers and streams, caves, landform development, plate tectonics, rocks, and minerals.

Upon successful completion of this course, the student should be able to:
• Identify volcanism, igneous activity, and the formation of igneous rocks.
• Describe the processes of weathering, erosion, sedimentation, and the formation of sedimentary rocks.
• Explain the basic ideas of metamorphism and the formation of metamorphic rocks.
• Define the mechanism and effects of earthquakes.
• Summarize the theory of plate tectonics.
• Apply the plate tectonic theory to mountain building, volcanism, earthquakes.
• Compare the faces of the moon, and the surface of other objects of our universe.

Prereq. MAT 060 and REA 060
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

ESS 111  Observational Astronomy
This course is designed for Natural Science majors although it will be appropriate for non-science majors as a laboratory science elective. Students will be introduced to astronomical concepts through observations, lectures and practical use of telescopes, CCD cameras and image processing to study objects in the night sky. Laboratory Observations and data collection of objects in night sky with telescopes, CCD cameras and other observational techniques will be made by the students to be used in lectures. Lectures and practical indoor activities on computer image processing of images taken by the students will be used to measure the position, brightness, motion and other data related to stellar and planetary objects. From these observations astronomers gain an understanding of astronomy and how astronomers know what they know about the universe. Upon successful completion of this course, students should be able to:
• Demonstrate proper use of telescopes and CCD cameras.
• Describe process of astronomical imaging with the CCD cameras.
• Measure the position of stars, planets and Moon with an astrolabe.
• Observe, record and analyze data collected from students observations as well as from observations of astronomical observatories.
• Demonstrate methods of image processing.
• Locate current information in journals and astronomical literature in the library and on the Internet.
• Presentation of final report.
• Describe other methods of imaging and collecting astronomical data.
• Explain how astronomers gain a knowledge and understanding of the stars and planets based on observations from here on Earth.
• Develop skills that can be used in life-long enjoyment, appreciation and study of the heavens.

Prereq. MAT 060 and REA 060
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

FRE 101  Elementary French I
The basic principles of pronunciation and grammar of the French language are emphasized. Vocabulary dealing with everyday situations is covered. Listening and speaking skills are developed through laboratory practice and increased use of French in the classroom.

Upon successful completion of this course, students should be able to:
• Reproduce with reasonable accuracy the sounds of the language.
• Respond in French in a satisfactory manner to basic conversational situations.
• Produce appropriate pattern and sentence transformation.
• Write in dictation form with a reasonable degree of accuracy from materials that have already been studied.
• Recall facts and observations of cultural interest.

Fewer than two yrs H.S. French
3 Credits 3 Weekly Lecture Hours

FRE 102  Elementary French II
This course stresses progress in the speaking, writing and reading skills begun in FRE 101 and promotes greater understanding of French culture. The mandatory use of laboratory tapes further develops listening and speaking skills.

Upon successful completion of this course, students should be able to:
• Demonstrate an increased understanding of the principles of good pronunciation.
• Show some facility in responding to familiar questions and requests given in French.
• Demonstrate in reading and writing an understanding of grammatical concepts previously presented.
• Exercise control of a larger vocabulary.
• Write in dictation form from familiar texts.
• Recall facts of culture contrasts shown in assigned reading.

Prereq. FRE 101 or 2 yrs. H.S. French
3 Credits 3 Weekly Lecture Hours

FRE 111  Intermediate French I
Review of the basic sounds of the French language, first-level vocabulary and grammatical content. Introduction of new language concepts and more advanced vocabulary and idioms. Weekly laboratory practice to strengthen understanding of fluent speech.

Upon successful completion of this course, students should be able to:
• Demonstrate the ability to read directly in French with increasing attention to correctness of sounds, rhythm, accentuation and intonation.
• Reproduce a representative number of the dialogue situations previously illustrated.
• Demonstrate correct use of essential grammatical and idiomatic structures previously presented.
• Produce original coherent sentences and short paragraphs.
• Write familiar texts by dictation.
• Identify patterns of cultural behavior or customs that have been presented in class discussions.

Prereq. FRE 102 or equiv.
3 Credits 3 Weekly Lecture Hours

FRE 112  Intermediate French II
Focus on understanding new language principles and the identification of these concepts in reading and writing. Reading in French from a variety of practical, cultural and literary texts. Frequent listening and speaking practice. Weekly laboratory exercises for better understanding of fluent French.
Upon successful completion of this course, students should be able to:

- Respond in French with reasonable accuracy and clarity to questions within the scope of the course.
- Read directly and accurately in the language at a level comprehensible to one fluent in French.
- Reconstruct or significantly modify learned responses or conversational patterns.
- Write coherent sentences and short paragraphs that use grammatical elements previously illustrated.
- Write in dictation form from class materials studied.
- Show some familiarity with French language contributions to the Western World and/or with cross-cultural contributions encountered in the course.

FST 100 Introduction to Fire Protection
A course in the history and development of fire protection. Topics covered are the role of the fire service in the development of civilization; personnel in fire protection; general introduction to fire hazards; and a discussion of the problems and possible solutions for current and future fire protection.

Upon successful completion of this course, students should be able to:

- Explain the operation of the major sprinkler systems employed in residential and commercial sites.
- Explain the internal operation of a fire pump, and the pump’s relationship to the engine and transmission.
- Explain the accumulation, storage, purification, and distribution of water for domestic and fire-fighting use.
- Describe proper fire alarm protection for residential buildings, including single family dwellings, dormitories and high-rise apartment buildings.
- Explain the safe operation of an aerial ladder truck when used as a rescue tool or water tower and when being used for routine work.
- Explain the safe operation of an articulated boom when used as a rescue tool or water tower and when being used for routine work.
- Construct a disaster plan for their municipality that would be used in the event of configuration, airplane crash, flood or other disaster.

3 Credits 3 Weekly Lecture Hours

FST 101 Principles of Fire Science Administration
Fire-Science Administration details the skills and techniques necessary for proper management of all aspects of fire service.

Upon successful completion of this course, students should be able to:

- Delineate the scope of management principles.
- Apply managerial functions to various positions in fire service.
- Explicate behavioral science aspects in management application.
- Direct managerial skills to achieve organizational needs.
- Assess a management-by-objective program in a fire service.
- Detail the objectives of fire prevention and the fire-inspection process.
- Outline and use pre-fire planning.
- Describe personnel management.
- Depict sound training techniques for fire personnel.

3 Credits 3 Weekly Lecture Hours

FST 102 Fire Prevention Theory and Application
This course is designed to cover the basics of the development of fire-prevention laws and ordinances for elimination of fire hazards, inspection, organization, practices and procedures. Theory and application of laws and ordinances in modern concepts of fire prevention are also covered.

Upon successful completion of this course, students should be able to:

- Organize a viable fire-prevention program.
- Trace the development of the science of fire prevention.
- Explicate the Fire Prevention Code.
- Conduct a thorough fire safety program.
- Maintain accurate records and reports via the Systems Analysis method.
- Use the Life Safety Code properly, including its means of egress and physical features.
- Apply the Life Safety Code regulations to the institutional, residential, mercantile and industrial areas.

3 Credits 3 Weekly Lecture Hours

FST 103 Fire and Arson Investigation
This course enables students to become familiar with the problems inherent in determining the causes of fires, recognition of arson, preservation of evidence and successful prosecution of those responsible.

Upon successful completion of this course, students should be able to:

- Cite the organizations established to investigate causes and types of arson.
- Depict the role of fire personnel in arson suppression.
- Detail the significant scientific aids available to the fire investigator.
- Outline the urban and suburban incendiary fire patterns that have increased in the last decade.
- Conduct interviews to establish fire causes.
- Write a comprehensive permanent record of a case and provide guidance in the preparation and conduct of litigation.
- Develop skills essential to offering expert testimony in civil and criminal arson cases.

3 Credits 3 Weekly Lecture Hours

FST 104 Fire Protection in Building Construction
This course is designed to expose students to the various types of building construction and the fire problems (including building collapse) of each.

Upon successful completion of this course, students should be able to:

- List the six common types of construction used in this area.
- Explicate the shifting of the various types of loads in a building during fire situations.
- Detail the appropriate methods of fire fighting for the various types of wood, siding, sheathing, masonry, concrete and steel buildings.
- Recognize and cite approved fire-fighting techniques for the various types of voids inherent in buildings.

3 Credits 3 Weekly Lecture Hours

FST 202 Fire Systems in Industry
This course is designed to acquaint students with the various aspects of private fire protection, from designing the physical facilities to instituting safety factors to extinguishing conflagrations.

Upon successful completion of this course, students should be able to:

- Assess occupational opportunities in industrial fire protection.
- Delineate the management responsibilities concerning property conservation.
- Detail the traits needed in and responsibilities of a director of property conservation.
- Depict the procedures required to begin a property conservation program.
- Provide the minimal functions required of the plant emergency organization.
- Establish a viable watch service.
- Classify the various types and components of sprinkler systems.
- Describe the advantages of each of the four basic types of alarm systems.
- Preplan for the normal property conservation emergency situations.

3 Credits 3 Weekly Lecture Hours

FST 200 Fire Operation Strategies
This course entails the various tactics and strategies involved in extinguishing fires. Emphasis is on the development of skills in analyzing and reacting to crises.

Upon successful completion of this course, students should be able to:

- Detail the general rules of safety and cite the most common deficiencies.
- Detail proper operating functions of engine and ladder companies at the fire scene.
- Evaluate fire conditions and select effective hose line placement, proper methods of ventilation, use of fog and appropriate safety measures.
- Explicate procedures used in fighting major fires, fires in buildings under construction and fires in various types of buildings.
- Delineate the procedures for post-fire analysis in order to improve performance.

3 Credits 3 Weekly Lecture Hours

GER 101 Elementary German I
The basic principles of pronunciation and grammar of the German language are covered and vocabulary dealing with everyday situations is emphasized. Listening and speaking skills are developed through laboratory practice and increased use of German in the classroom.

Upon successful completion of this course, students should be able to:

- Recognize the essential differences between the German and English pronunciation systems.
- Understand in oral and written form first-level content words and grammatical principles.
• Read aloud in German with due attention to principles of good pronunciation including word stress and intonation patterns.
• Produce appropriate pattern and sentence transformation.
• Write in dictation form with a reasonable degree of accuracy from materials that have been studied.
• Recall familiar facts of German civilizations from reading assignments.

GER 102 Elementary German II
This course stresses progress in the speaking, writing and reading skills begun in GER 101 and promotes understanding of German culture. The mandatory use of laboratory tapes further develops listening and speaking skills.
Upon successful completion of this course, students should be able to:
• Respond in German to a representative number of daily situations.
• Produce with more accuracy the phonetic sounds of the language.
• Read familiar prose aloud in a manner acceptable to the fluent speaker of German.
• Carry out familiar requests made in German.
• Demonstrate increased command of vocabulary and elements of grammar.
• Briefly express ideas on a given topic.
• Recall familiar facts of German civilizations from reading assignments.
Prereq. GER 101
3 Credits 3 Weekly Lecture Hours

GRA 121 Three-Dimensional Design
This course is an introductory course that entails deliberate decision-making based on the elements and principles of design within a three-dimensional space. A variety of media including traditional and non-traditional materials may be utilized through additive and subtractive methods. Historical and contemporary references may be used to investigate techniques and stimulate discussion toward conceptualizing, visualizing and execution. Demonstration, discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Demonstrate the ability to apply the general principles of design including unity/variety, balance (symmetrical, asymmetrical, radial and crystallographic), emphasis, rhythm, repetition, proportion/scale, and figure/ground relationship within three dimensional space.
• Manipulate and fabricate a variety of materials.
• Articulate how design elements and principles may influence perception conceptually and aesthetically.
• Utilize site-specific location, light and space.
• Integrate critical thinking skills
3 Credits 3 Weekly Lecture Hours

GRA 122 Two-Dimensional Design
This course is an introductory course that entails deliberate visual decision-making based on the elements and principles of design on a two-dimensional surface. A variety of media including wet, dry, and/or digital possibilities will be a focus of this course. Demonstration, discussion and formal critiques will augment audio work.
Upon successful completion of this course, students should be able to:
• Demonstrate the ability to apply the general principles of design including unity/variety, balance (symmetrical, asymmetrical, radial and crystallographic), emphasis, rhythm, repetition, proportion/scale, and figure/ground relationship.
• Manipulate the general elements of visual language including line, shape, volume texture and space.
• Utilize the full grey scale including black and white.
• Integrate critical thinking skills through completed artworks and formal critiques.
Prereq: None
3 Credits 3 Weekly Lecture Hours

GRA 123 Color and Design
This course will emphasize an in-depth study of the basic properties of color. Color-aid papers as well as pigment will serve as the basic media used in this course. Demonstration, discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Manipulate properties of hue, value and chroma.
• Understand the effects of light upon color within the context of warm and cool colors.
• Demonstrate knowledge and understanding of the 12-hue color wheel.
• Understand the psychological and expressive qualities of basic color relationships.
• Integrate critical thinking skills through completed artworks and formal critiques.
Prereq. GRA 122
3 Credits 3 Weekly Lecture Hours

GRA 133 Drawing I for Graphic Design Majors
This course for Graphic Design Majors is intended for the student who wishes to pursue advanced study or a career in the visual arts. Lines, planes, and volumes are explored as elements of form. Analytical line and tone are the languages used in this pursuit. A variety of media will be used with an emphasis on pencil and charcoal.
This class is designed to develop perceptual, technical, and creative skills through problem solving.
Upon successful completion of this course, students should be able to:
• Use line to describe geometric form with accuracy of measure - size, scale, proportion, and location.
• Use variation in line weight to indicate closeness and distance.
• Use the vocabulary of the emerging quality of line to suggest spatial relations to the picture plane.
• Use axes, placement lines, and tracking lines to compose with accuracy.
• Understand the rudiments of composing.
• Employ the conventions of perspective.
• Use the grayscale to depict relative value within a composition.
• Analyze problems and deliver thoughtful and appropriate solutions.
• Critique and be articulate about one’s own work and the work of classmates.
May be taken twice for credit
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

GRA 134 Drawing II for Graphic Design Majors
This course will continue to stress general foundation drawing skills. A variety of wet and dry media including color media will be a focus in this course. Subject matter will expand from still-life to more conceptually based integration of various imagery. Demonstration, discussion and formal critiques will augment studio work.
Upon successful completion of this course, students should be able to:
• Demonstrate the ability to draw utilizing perceptual means incorporating the basic properties of line, value, scale and proportion, figure-ground relationship, texture and color.
• Demonstrate the ability to activate the concept of the picture plane using traditional and non-traditional means.
• Produce cohesive composition.
• Manipulate the illusion of three-dimensional forms and spaces.
• Integrate critical thinking skills through completed artworks and formal critiques.
Prereq. GRA 133
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

GRA 136 Drawing as Design Process
This course is a second semester drawing course intended specifically for GRA majors going directly into the work force upon graduation. This course will focus on specific freehand drawing skills needed to be successful in the daily requirements of the advertising and commercial design fields through structural analysis of man-made and natural forms. The elements of line, shape, value and spatial organization will be stressed to develop drawings suitable for inclusion in the student’s design portfolio.
Upon successful completion of this course, students should be able to:
• Draw from observation using elementary forms and
GRA 133 Prerequisites

- GRA 133 and GRA 122
- Computer assessment test

- Manipulate scanned images for direct output or export
- Operate a flatbed scanner to input line art grayscale
- Manipulate color formulas and articulate the differences
- Demonstrate mastery of using the basic menus, should be able to:
  - Print Postscript graphic files on a black and white laser printer.
  - Control and manipulate Bezir curves and paths.
  - Create color palettes and choose appropriate color matching systems.
  - Format text using typographic controls.
  - Print Postscript graphic files on a color printer.
  - Organize drawings using layers.
  - Choose appropriate menus and commands in order to create and modify object-oriented drawings.
  - Control fills, strokes, position and orientation of vector object.
  - Prepare a multiple-page document for output from a service bureau.
  - Utilize color-matching systems.
  - Apply appropriate file management techniques for prepress.
  - Create multiple-page publications integrating text, bitmapped and object-oriented graphics.
  - Create and modify object-oriented drawings.
  - Import, crop and scale graphic elements.
  - Create master pages.
  - Organize drawings using layers.
  - Print Postscript graphic files on a black and white laser printer.
  - Format text using typographic controls.
  - Print Postscript graphic files on a color printer.

Recommendation: Satisfactory score on Macintosh computer assessment test

GRA 213 Page Layout

This course covers the fundamentals of using computer based publishing software. Students complete several activities and tutorials in order to create a variety of simple documents that integrates type and graphics. Advanced features of computer-based publishing software are covered in the production of multi-page color documents will be covered. In this course, students gain an understanding of using the computer for the creation of publication design. Students will be given hands-on instruction on Apple Macintosh computers using industry standard publication software.

Upon successful completion of this course, students should be able to:
- Demonstrate mastery of using the basic menus, commands and tools of a page layout program.
- Select, specify and copytext and display type using correct terminology.
- Import and edit text imported from a word processing program.
- Apply character and paragraph style formatting to text.
- Customize and wrap text flow.
- Import, crop and scale graphic elements.
- Create master pages.
- Create multiple-page publications integrating text, bitmapped and object-oriented graphics.
- Utilize style sheets, master pages and templates to organize complex documents.
- Utilize color-matching systems.
- Apply appropriate file management techniques for prepress.
- Prepare a multiple-page document for output from a service bureau.

Gra 213 and GRA 211 3 Credits 3 Weekly Lecture Hours

GRA 208 Computer Illustration

This course is an introduction to the computer as a drawing and design tool. An object-oriented drawing program is introduced with hands on computer instruction. Basic vector graphic techniques, organizing the components of an illustration, printing Postscript proofs, text entry and formatting, color mixing and palette organization, color proofing and special path operations are stressed. In this course, students should gain an understanding of using computers for the creation of drawings and illustrations. Students will be given hands-on instruction on Apple Macintosh computers using industry standard drawing software.

Upon successful completion of this course, students should be able to:
- Choose appropriate menus and commands in order to create and modify object-oriented drawings.
- Control fills, strokes, position and orientation of vector object.
- Organize drawings using layers.
- Print Postscript graphic files on a black and white laser printer.
- Control and manipulate Bezir curves and paths.
- Create color palettes and choose appropriate color matching systems.
- Format text using typographic controls.
- Print Postscript graphic files on a color printer.
- Apply typographic hierarchy to organize a page layout.

Recommendation: Satisfactory score on Macintosh computer assessment test

Gra 213 and GRA 122 3 Credits 6 Weekly Lecture Hours

GRA 211 Digital Imaging

This course introduces the use of bitmapped image editing software for the creation of bitmap, grayscale and color imagery. Special attention is given to scanning images, resolution formulas, appropriate file formats for use in graphic applications, color correction, organization of images, printing and prepress production and color management are covered. In this course, students should gain skills in critical color comparison and manipulation and understand the process of preparing graphic files for production. Students will be given hands-on instruction on Apple Macintosh computers using industry standard imaging and scanning software.

Upon successful completion of this course, students should be able to:
- Demonstrate mastery of using the basic menus, commands and palettes of an image-editing program.
- Manipulate color formulas and articulate the differences between color modes.
- Operate a flatbed scanner to input line art grayscale and color images and choose appropriate resolutions for each.
- Manipulate scanned images for direct output or export to other types of graphic programs.
- Use color correction functions to improve the quality of scanned images.
- Print proofs to a color printer for color composition and correction.
- Format a document for print and digital production and export to other graphic programs.
- Manipulate a composite image using layers and masking techniques.
- Create advanced special effects.

Prereq. GRA 122 and GRA 133

3 Credits 3 Weekly Lecture Hours

GRA 225 Pre-press and Printing Process

In this course you will investigate digital file composition and the use of computing technology as it applies to the preparation of digital files for the printing industry. Printing and binding methods used to reproduce the work of the graphic designer will be studied. Technical, time and budget constraints are emphasized in order to relate design and production costs to real-world situations. Students will gain hands-on experience with a variety of graphics hardware and software commonly used for computer prepress.

Coursework includes lecture, demonstration, case study, field trips, projects and discussion.

Upon successful completion of this course, the student should be able to:
- Define design objectives and how work flows thru the imaging process.
- Identify and define line art and halftone reproduction processes.
- Identify and define the most commonly used printing methods and color systems.
- Identify and specify appropriate paper stock for various types of printing jobs.
- Define and differentiate between the various commercial printing methods.
- Identify and define printing-related processes such as engraving, embossing, diecutting, foil stamping and the most commonly used bindery methods.
- Identify and list the advantages, disadvantages and capabilities of different storage media and use of file compression utilities for file transfer and storage.
- Perform font management activities.
- Understand, use and apply calibration techniques to computer monitors and desktop scanners.
- Apply troubleshooting techniques to hardware and software problems.
- Output digital files on Postscript and non-Postscript printers.

Prereq. GRA 208, GRA 211 and GRA 213

3 Credits

GRA 227 Web Graphics

This course introduces students to the design of web pages and user-interaction and application for the World Wide Web (WWW). The focus of this course will be functional design that encourages, enhances and simplifies the web browsing experience. Students learn to design effective user interfaces using image editing software, Hypertext Markup Language (HTML) editors and other web development software. Students will explore interface theory, design principles and develop hands-on experience creating visually exciting web pages.

This course is intended for students wishing to pursue a career or advanced study in graphic design as it relates to design of web graphics and their interaction.

Upon successful completion of this course, the student should be able to:
- Employ the theory and principles of effective web design.
- Define design principles to the structure of HTML formatted web documents with emphasis on the visual aesthetic.
- Organize effective navigation between various interface designs.
- Apply basic HTML hard-coding to web documents using visual editing software.
- Use image-editing software to produce efficient web graphics.
- Use a professional quality visual editor to develop and maintain web documents and sites.
- Transfer files to a server using File Transfer Protocol (FTP)

Prereq. GRA 213 and GRA 215

3 Credits
GRA 228  Motion Graphics
This course introduces students to time-based graphics through animation. The focus of the course will be on developing a beginner-to-intermediate vector and bitmap animation for web delivery and related presentation applications. Students will learn to design effective timeline sequences incorporating vector-drawing techniques, tweening, frame-by-frame animation procedures, bitmap imagery, typographic techniques and basic scripting. Design theory for interactive media is coupled with hands-on experience for creating visually rich animations, web pages and presentations.

This course is intended for students who desire intermediate-level study in animation and time-based motion graphics. Upon successful completion of this course, the student should be able to:
• Develop a storyboard for time-based media.
• Design vector objects and raster images for motion graphics with emphasis on the visual aesthetic.
• Create basic animation sequences using vector-drawing tools.
• Execute frame-by-frame animations using a timeline.
• Implement tweening properties.
• Script basic commands for interactivity.
• Design a user-friendly environment.
• Create and utilize sound in a movie file.
• Deliver optimized movies to appropriate audiences.
Prereq. GRA 213, GRA 215
3 Credits 3 Weekly Lecture Hours

GRA 230  Graphic Design I
This is an intermediate level course for graphic design majors. Through a series of projects, students learn to employ basic design concepts in solving different types of visual communications problems.

Upon successful completion of this course, students should be able to:
• Combine type and image in a layout to communicate an idea or message.
• Interpret and represent an idea by means of a mark or symbol.
• Interpret advertising copy and incorporate it in a design.
• Demonstrate visual gestalt principles in solving a design problem.
• Use traditional graphic design tools and techniques to develop a design concept from sketch to tight comprehensive layout.
• Evaluate visual solutions to design problems verbally and in writing.
Prereq. GRA 213, GRA 208, GRA 211
3 Credits 3 Weekly Lecture Hours

GRA 231  Graphic Design II
This course is a continuation of Graphic Design I. In this course students refine skills and work habits related to the creative process for solving visual communication problems. Projects emphasize the development of design priorities and alternatives based on client need and production constraint.

Upon successful completion of this course, students should be able to:
• Write a design brief.
• Apply basic design principles to the organization and use of type, color and composition in a multi-page publication.
• Develop a simple corporate identity system.
• Design and mock-up a basic package design.
• Solve a simple interface design problem.
• Present a design project to a client both verbally and visually.
Prereq. GRA 213 and GRA 230
3 Credits 3 Weekly Lecture Hours

GRA 232  Portfolio Seminar
This advanced-level course for graphic design majors covers the creation and selection of art work required in job, college transfer and co-op interview situations. Course work includes lecture, studio activities, class critique and discussion, along with independent study.

Upon successful completion of this course, students should be able to:
• Select, critique and refine a body of personal artwork that represents a range of artistic abilities and media.
• Mount and present art work in a professional manner.
• Create a logical sequence for personal artwork presentation.
• Examine and select portfolio pieces appropriate for a specific audience.
• Photograph both two and three-dimensional work on color slide film or digital media.
• Select a portfolio format (digital, slide, original work) appropriate for a specific audience.
• Design and produce a self-promotional leave-behind.
• Write and design a resume or intention letter.
• Define and solve a design problem that exhibits the integration of studio skills from several courses.
• Make a portfolio presentation to a small group outlining project objectives, methods and materials.
Prereq. 28 cr in GRA discipline Coreq. GRA 231
3 Credits 3 Weekly Lecture Hours

HIS 100  American Civilization
American civilization from colonial times to the present is an articulated study, but general in focus, of the history of the United States. The course as a whole is designed to give students a broad foundation on the following topics in American civilization: history, literature, economics, political science, religion, art and architecture.

Upon successful completion of this course, students should be able to:
• Analyze and explain the causes and results of the following wars: Revolutionary War, War of 1812, the Civil War, and World Wars I and II.
• Examine and evaluate the major American writers and their works.
• Describe the growth of the American economy and labor from colonial times to the present.
• Analyze the principal political ideologies in American society.
• Discuss the role of religion in the colonization of the New World and its impact on American society today.
• Be familiar with the variety of American art and architecture.
Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

HIS 110  American History I
An inquiry into the history of the United States from the introduction of African and European peoples in the Americas through the period of reconstruction following the Civil War. Includes the periods of European exploration, Colonial America, the American Revolution, Confederation and Constitution, Federal and Republican, Jacksonian, Manifest Destiny, Sectionalism, the Civil War and Reconstruction.

Upon successful completion of the course, students should be able to:
• Assess the causes and effects of major U.S. wars on the growth and development of the country.
• Trace the evolution of U.S. political structures through reconstruction, using important documents as evidence.
• Explain the growth of social complexity in U.S. society.
• Identify the dominant values in American society through specific eras (Colonial, Jeffersonian, Jacksonian, and Antebellum, Reconstruction).
Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

HIS 120  American History II
Continues the inquiry into the history of the United States from the Reconstruction era to the present day. Includes post-Civil War politics, the Western frontiers, industry and labor, imperialism, the arts and sciences, progressive era, World War I, post-war prosperity and depression, New Deal, policy and diplomacy, World War II, the Cold War, Vietnam, civil rights struggle, and the 1970s and 1980s.

Upon successful completion of this course, students should be able to:
• Differentiate the impact of industrialization on the population of self-sufficient farmers, blacks, “old” and “new” immigrants, workers and business people.
• Trace the illusion of isolation and the practice of imperialism as the nation moved from nationalism to internationalism between 1865 and contemporary times.
• Characterize the methods of reform used by the radical republicans, populists, progressives, New Dealers, and in the post-World War II era.
• Evaluate the involvement and effectiveness of the U.S. in World War I, II and the Cold War.
Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

HIS 130  Western Civilization I
An evaluation of the history of the Western world from its beginnings to the Renaissance and Reformation. Examines the civilizations of the ancients, early Christian times, the feudal world, the European Middle Ages, the Renaissance and Reformation.

Upon successful completion of this course, students should be able to:
• Evaluate the impact of the ancient near Eastern cultures on the development of Western civilization.
• Analyze the political, social, philosophical and artistic achievements of the Greco-Roman civilization.
• Explicate the cultural dynamic that shaped Western Europe between the 5th and 15th centuries.
• Explain the impact of the Renaissance and the Reformation on the evolution of Western culture.
Prereq. 28 cr in HIS discipline
3 Credits 3 Weekly Lecture Hours

HIS 140  Western Civilization II
Continues the evaluation of the history of the West from the Renaissance-Reformation period to the present. It encompasses the underlying political, social, intellectual, cultural and economic elements that have influenced the West. Areas of investigation include exploration and commerce, religion-political post-Reformation wars, age of Baroque, age of reason, revolutionary era, age of Merto-linch, European imperialism, World Wars and the Cold War.

Upon successful completion of this course, students should be able to:
• Evaluate the effects of the enlightenment on the evolution of Western culture.
• Explain the impact of the 17th- and 18th-century revolutionary movements on the sociopolitical development of Western Europe.
• Analyze the principal ideologies that were born in 19th-century Europe.
• Describe the effects of the Industrial Revolution on the development of Western culture.
• Detail the development of national states in France, England, Germany and Italy.
• Analyze the causes and effects of the principal 20th-century wars.
Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours
HIS 200 Civil War and Reconstruction
This course encompasses the critical period of American history from 1850 to 1877. It examines the political, social, diplomatic and economic aspects of the Antebellum, Civil War and Reconstruction periods. It also emphasizes the military and naval activities of the time.
Upon successful completion of the course, students should be able to:
• Describe the major causes of the Civil War.
• Relate the elements of the Compromise of 1850 and their importance to the preservation of the Union.
• Enumerate the events of the 1850s that had an effect on the Civil War.
• Evaluate the actions of Lincoln and the southern authorities in relation to the attack on Fort Sumter.
• Compare the various resources of the North and the South and show why the war lasted four years.
• Compare the governmental systems of the United States and the Confederate States for weaknesses and strengths.
• Detail Union and Confederate strategies for successfully concluding the war for each side.
• Relate the importance of the major military and naval operations of the war and determine the reasons for their successes or failures.
• Describe civilian life during the war in the North and the South.
• Evaluate the contributions of important civilian, military and naval personnel to the war efforts of each side.
• Identify and explain the importance of certain battles, diplomatic endeavors and legislation upon the war and its prologue and aftermath.
• Cite and explain the major issues in the elections of 1852, 1856, 1860, 1864, 1868, 1872 and 1876.
• Relate the events leading up to the Compromise of 1877, the details of the compromise and its effects.
• Explain the significance of the “Reconstruction Amendments.”
• Evaluate the successes and failures of Reconstruction with special emphasis upon their significance in the 20th century.
• Explain the relationship of the Radical Republican Congress to the president and the Supreme Court and show how this Constitutional crisis was resolved.
3 Credits 3 Weekly Lecture Hours

HIS 201 African-American History
This course is an introductory survey course in black history. It exposes students to the roles played by Africans and people of African descent in world history.
Upon successful completion of this course, students should be able to:
• Trace African heritage and culture in both Africa and the United States.
• Evaluate the contributions and influence of African people in the development of Western Culture.
• Describe the experience and contributions of Afro-Americans in the United States.
• Assess the history of the African continent in terms of cultural, political and economic factors from the earliest periods to the present, including Sub-saharan/Islamic Africa, the pre-colonial eras and post-World War II development.
3 Credits 3 Weekly Lecture Hours

HIS 210 Diplomatic History of the United States
This course is a survey of the diplomatic and foreign policy of the United States with particular emphasis upon 20th century American diplomacy with its consequent U.S. involvement on the international scene.
Upon successful completion of this course, students should be able to:
• Explicate the basic provisions of the federal constitution that govern the establishment and administration of American foreign policy.
• Evaluate the views of “Conflict,” “Consensus” and “New Left” historians on the development of American foreign diplomacy.
• Analyze the role of American foreign policy on the declaration of prosecution of major American wars.
• Delineate the major goals of American foreign policy.
3 Credits 3 Weekly Lecture Hours

HIS 215 History of World War II
This course will study the major causes and effects of World War II. It will also examine the complexity of global warfare and allied cooperation. In addition, the course will examine the operational art and the moral problems of modern war. It will also address the significance of the Holocaust.
Upon successful completion of the course, students should be able to:
• Describe the unique features of “Global War.”
• Depict the major strategies, campaigns and crises of war.
• Explain the leadership roles of Roosevelt, Churchill, Hitler, Tojo, and Mussolini.
• Justify your ethical philosophy concerning modern warfare.
• Depict the changes in the world’s political balance of power.
• Cite the daily stress in warfare for the individual service personnel.
3 Credits 3 Weekly Lecture Hours

HIS 220 History of Europe Since 1914
A study of the history of Europe since the beginning of the Great War. It includes a detailed look at World War I, the post-war decade, the rise of the dictator, World War II, and its aftermath and the Cold War.
Upon successful completion of this course, students should be able to:
• Analyze the ideas of Marxism as an economic theory and as a philosophy of history.
• Delineate the causes and effects of World War I.
• Analyze the causes and effects of the Russian Revolution.
• Describe the trends in art, literature, and music in early 20th-century Europe.
• Analyze the rise of totalitarian regimes in Italy and Germany.
• Delineate the causes and effects of World War II.
• Evaluate the historic roots of Europe’s current role in the world politics.
3 Credits 3 Weekly Lecture Hours

HIS 224 History of the First World War Special Studies
The purpose of this course is to familiarize students with the major causes, events, and ramifications of the Great War. Upon completion of this course, students will understand the problems that led to the conflict, the major events that shaped its outcome, and the effects of the war that still resonate today. Students will also be exposed to primary and secondary sources pertaining to the Great War through group presentations, writing assignments, and online projects.
Upon successful completion of this course, students should be able to:
• Possess a deeper understanding of the causes, major events, and ramifications of the Great War.
• Think and write critically and analytically about issues concerning the Great War, its causes, and its outcomes.
• Be familiar with scholarly literature and identify differing points of view on controversial topics pertaining to the Great War.
• Read, comprehend, and synthesize primary and secondary sources dealing with the Great War.
• Work in groups to present material to the class and complete an online assignment.
• Recognize how the Great War still resonates in the today’s global issues.
Prereq. ENG 100, REA 100
3 Credits 3 Weekly Lecture Hours

HIS 225 History of World War II
This course will study the major causes and effects of World War II. It will also examine the complexity of global warfare and allied cooperation. In addition, the course will examine the operational art and the moral problems of modern war. It will also address the significance of the Holocaust.
Upon successful completion of the course, students should be able to:
• Describe the unique features of “Global War.”
• Depict the major strategies, campaigns and crises of war.
• Explain the leadership roles of Roosevelt, Churchill, Hitler, Tojo, and Mussolini.
• Justify your ethical philosophy concerning modern warfare.
• Depict the changes in the world’s political balance of power.
• Cite the daily stress in warfare for the individual service personnel.
3 Credits 3 Weekly Lecture Hours

HIS 235 20th Century World History Special Studies
Four significant modern cultural features of the nineteenth century were the growth and development of Liberalism, Capitalism, Socialism and Nationalism. By the 20th century seeds of liberalization were firmly planted in many places around the globe, but so too were the seeds of its own undoing. National and ethnic competition, conservative and radical ideologies, and the growth of material and legal inequality challenged the assumptions of nineteenth century ideals, and instead displayed a more typical pattern of hum behavior which led to serious conflict. The World Wars were indicative of this competition and conflict between the ideologies of various peoples. By mid-century two super powers emerged with alternate interpretations of the liberal ideal, but perhaps more importantly, people around the globe began to question the values of the super powers in favor of new ideologies outside of the current of liberal individualism. Revolts and popular movements in Asia, Africa and the United States questioned the values of modernity as superficial, and offered an alternative discourse, which culminated in the growth and establishment of new geo-political forces by the close of the 20th century. As the century closed globalization of the world economy and the communication revolution of the internet changed world culture bringing the possibilities for community among diverse peoples, but also division among communities. The War on Terror stands as a testament to the struggles of the 20th century with changing values, ideas and attitudes towards world historical events.
Upon successful completion of this course, students should be able to:
• Explore variables of Race, Ethnicity, Class, Sexuality, and Religious Background to demonstrate the Diversity of World Cultural Development.
• Explain the difference between fact and interpretation to give students a clear understanding of how to use fact and commentary from primary and secondary sources to develop interpretive frameworks on a variety of information types.
• Develop analytical skills through an evaluation of cause and effect to suggest how and why events happen based upon historical fact sets.
• Develop critical thinking skills through an examination of the significance of historical information within varying contexts.
• Use social science methods and models to give students effective tools to compose their own interpretations in both oral and written formats.
• Discuss historical information to promote student’s intellectual capacity to create dialogue on meaningful and relevant events in their own place and time.
3 Credits 3 Weekly Lecture Hours

HIS 241 History of Ireland
This course examines the early history of Ireland to 1607. It encompasses such topics as pre-Celtic Ireland, the conquest by the Gaels, pagan Ireland and the coming of Christianity, Gaelic life and customs, the Norse invasions, Brian Boru, the Norman invasion and Anglo-Norman Ireland, Tudor Ireland, revolts and English colonization.
Upon successful completion of this course, students should be able to:
• Explain the development of early Gaelic culture.
• Evaluate the impact of Christianity on the Gaels.
• Analyze the Irish influence on the development of Britain and Europe.
• Describe life in medieval Ireland.
• Evaluate the results of the Norman invasions of Ireland.
• Assess the influence of the Tudors on 17th-century Ireland.
3 Credits 3 Weekly Lecture Hours
HIS 242 History Of Ireland II
This course examines the history of Ireland from 1607 to the present. It encompasses such topics as the reformation in Ireland, Stuart and Cromwellian Ireland, penal laws, rise of Protestant nationalism, rebellion and union with Britain, Catholic emigration, famine and rebellions, home rule, Easter Rising, independence and civil strife, the Free State and Republic, and current problems. Upon successful completion of this course, students should be able to:
- Assess the effects of the Stuarts on 17th-century Irish history.
- Evaluate the impact of Oliver Cromwell and the Rump Parliament on Irish History.
- Analyze the Rebellion of 1798.
- Discuss how the union with Great Britain was accomplished.
- Detail the Irish Nationalist movement of the 18th and 19th centuries.
- Evaluate the role of the Catholic Church in Ireland upon Irish Nationalist aspirations.
- Assess the Rebellions of the 20th century.
- Analyze and discuss the results of the partition of northeastern Ireland.

3 Credits 3 Weekly Lecture Hours

HIS 250 Italian Renaissance
This course covers all aspects of the Italian Renaissance, including politics, science, literature, the arts and cultural institutions. It encompasses such topics as civic humanism and the role it played in stimulating cultural life; the significance of diplomacy; the overall artistic achievements; and why this amazing period of history unfolded in Italy rather than in France, England or Germany. Upon successful completion of this course, students should be able to:
- Discuss how the Renaissance revival of classical learning differed from the previous medieval revival.
- Define humanism.
- Assess the achievements and limitations of humanism.
- Compare the similarities and individuality of the following Italian writers: Dante, Petrarch, Boccaccio and Pico della Mirandola.
- Discuss the changing role of the Renaissance artist and intellectual from that of medieval craftsmen and artists.
- Describe Castiglione’s ideal of the perfect courtier from his book The Courtier.
- Explain the economic advantages that made prosperity boom in Renaissance Italy and its impact on art and culture.
- Evaluate and describe “civic humanism” and the role it played in stimulating the cultural life of Italy.
- Discuss the significance of diplomacy in Renaissance Italy.
- Explain and give examples of what Machiavelli considers “state-craft” to be in his book The Prince.
- Summarize the factors that worked against the political unification of Italy.
- Explain why the Renaissance began in Italy rather than France, England or Germany.
- Describe the main characteristics of the artistic change that took place in 15th-century Italy beginning with Brunelleschi’s Foundling Hospital and Masaccio’s The Expulsion as the major examples of the shift from Middle Ages to the Renaissance.
- Evaluate the overall artistic achievement of the Italian Renaissance.
- Discuss the specific ideas of Vesalius and Galileo.

3 Credits 3 Weekly Lecture Hours

HIS 252 Women in History
This is a survey course in Women’s History. It will not only focus on the historical struggles to attain status but will also examine dominant thought within the discipline such as feminism, postmodernism, Womanist and global theories as related to women. Upon successful completion of this course, students should be able to:
- Analyze the evolution of the biological, ideological and political subordination of women.
- Examine the different facets of social activism to achieve extension of academic and political rights.
- Investigate the dominant issues relating to women such as health, reproductive rights, employment and violence.
- Contrast the economic and social status women's lives in different countries and the role of culture in determining their status.
- Explore the cultural expressions of women that give definition to their lives.

3 Credits 3 Weekly Lecture Hours

HIS 253 Latino-American History
This course provides an introduction to the history of Latinos residing in the United States. It covers the Spanish colonization, the Mexican-American War, Repatriation, the Latino migration, as well as crucial events that have influenced the Latino-American experience, such as the Bracero Program, the Chicano Movement, the War on Poverty, U.S. foreign policy in Latin America, and various recent historical developments. Upon successful completion of this course, students should be able to:
- Identify and discuss major events that have influenced Latino-American history.
- Demonstrate the ability to contextualize crucial events in Latino-American history.
- Demonstrate an increased understanding of the experiences of Latinos as U.S. residents and citizens.
- Demonstrate knowledge of Latino-American contributions to life in the United States.
- Demonstrate the ability to apply course concepts and use appropriate terminology.

Complete and present a brief research project on an issue in Latino-American history

Prereq. ENG 050 and REA 050

3 Credits 3 Weekly Lecture Hours

HIS 254 World Civilization I
An introductory history of the development of the world’s major civilizations to 1500. The course emphasizes the role of economic, social, and political change throughout the ancient and medieval periods of world civilization. Students will gain a greater understanding of the foundations of world civilizations and cultures.

Upon successful completion of the course, students should be able to:
- Analyze the development and nature of separate world cultures created over several centuries.
- Explain the creation of the political, economic, social, and religious foundations of civilization in the ancient period (3500 B.C.E. - 500 C.E.)
- View how societies devised different solutions to key difficulties in forging a durable civilization.
- Examine the role of geography and environment in the development of diverse civilizations.
- Gain a greater understanding of the roots of the modern world through the examination of the diversity, complexity, and individuality of major world civilizations.
- Discuss the implications of early aspects of globalization in world history.
- Utilize a variety of source material (documents, maps, Internet sources) to examine ancient and medieval world history.

Prereq. ENG 050 and REA 050

3 Credits 3 Weekly Lecture Hours

HIS 255 World Civilization II
An introductory history of the development of the world's major civilizations since 1500. The course emphasizes the role of economic, social, and political change throughout modern world history. Students will gain a greater appreciation for the interaction and interdependence of nations and cultures within the modern world. Upon successful completion of the course, students should be able to:
- Analyze the development and nature of separate world cultures created over several centuries.
- Understand the creation of a global community from 1500 through the nineteenth century.
- View how societies devised different responses to globalization.
- Examine the creation of the contemporary world through analysis of the major historical themes of the twentieth century.
- Gain a greater understanding of the diversity, complexity, and individuality of global societies since 1500.
- Utilize a variety of source material to examine modern world history.

Prereq. ENG 050 and REA 050

3 Credits 3 Weekly Lecture Hours

HIS 256 History of Modern Islam
This course will examine the history of the Islamic peoples in the formative period of Islam. It will also discuss the role of Islam in the political and social development of various regions of the world. Upon successful completion of the course, students should be able to:
- Assess the causes and effects of major events and developments within the Islamic World and the Middle East.
- Trace the origin and the early history of Islamic culture as an outgrowth of the life of the Prophet Mohammed and Arabic culture.
COURSE DESCRIPTIONS

HRM 110  Food Handler Sanitation
This is a 15-hour certification course for food handlers and especially for supervisors. The course is approved by the Pennsylvania Department of Agriculture, Bureau of Food Safety and Laboratory Service.

Upon successful completion of this course students should be able to:
- Satisfactorily pass the examination administered by the college.
- Identify the causes of food-borne illness.
- Handle, store and prepare food in accordance with generally accepted sanitation procedures.
- Apply federal, state and local regulations/laws specific to food-service procedures.
- Implement a self-inspect sanitation program in a food-service operation.

3 Credits  3 Weekly Lecture Hours

HRM 155  Front Office Management
This course covers in detail the procedures of the hotel/motel front office, including the duties of the manager, desk agent, night auditor, reservations, credit and cash handling.

Upon successful completion of this course, students should be able to:
- Develop a hotel organization structure.
- Use basic procedures of a room-reservation system.
- Apply specific knowledge of the lodging industry to careers.
- Register, sell and assign guest rooms.
- Derive room-pricing strategies using various decision-making techniques.
- Communicate interdepartmentally using machines, terminology, symbols and racks.
- Prepare accounts and control cash using manual and machine procedures.
- Use basic procedures of the night audit.
- Prepare and use hotel statistical ratios.
- Apply basic knowledge of the use of computers.

3 Credits  3 Weekly Lecture Hours

(HRM) Hotel/Restaurant Mgmt

HRM 100  Introduction to Hospitality
This course introduces students to the vast lodging and food service industry. The origins and history of the modern American hotel/motel business and the enormous growth of the food industries are presented in the context of global tourism. Supervisory duties including organizational theory, resource management of the prime cost associated with these businesses, and asset control processes are introduced. Career opportunities are examined as an essential part of the course.

Upon successful completion of this course, students should be able to:
- Structure task performance in an organization within the lodging/food service industry.
- Apply a basic knowledge of the vastness of the hospitality industry to personal career development.
- Understand the role(s) of various operational functions.
- Use the basic knowledge of record keeping and financial controls common to this industry.
- Increase revenue through marketing.

3 Credits  3 Weekly Lecture Hours

HRM 151  Professional Cooking II
Students are introduced to the modern food preparation techniques used in commercial food operations. Through classroom and culinary lab demonstrations, students learn commercial kitchen organization, the safe/sanitary method of handling minor and major kitchen equipment, menu building, recipe development, preparation of meats, poultry, fruits, vegetables, basic sauces/stocks, simple desserts and beverages. Emphasis is on learning by doing. The safe/sanitary handling of food is stressed. Proper uniform is required in the lab.

Upon successful completion of this course, students should be able to:
- Describe the contributions made by Latinos to American life.
- Demonstrate the ability to apply course concepts and use appropriate terminology to explain the political and social experiences of Latinos.
- Prepare and present a brief research project on an important political or social issue pertaining to Latinos residing in the United States.
- Identify various cuts of beef, pork, lamb and veal and use proper storing practices.
- Identify various types of poultry and their various cooking, handling and storing practices.
- Identify and prepare various vegetables (fresh, frozen, canned and dried) controlling texture, flavor, color changes, nutritional loss and storage.
- Prepare salads and salad dressings as appetizers, main courses and desserts.
- Prepare simple desserts.
- Prepare simple breads and rolls.
- Prepare daily items and hot beverages.

3 Credits  3 Weekly Lecture Hours

HRM 162  Laws of Innkeepers
This course covers in detail the procedures of the hotel/motel front office, including the duties of the manager, desk agent, night auditor, reservations, credit and cash handling.

Upon successful completion of this course, students should be able to:
- Outline the duties the law creates to protect guests and restaurant/hotel operators.
- Discuss areas where food service and lodging properties may be affected by federal, state and local regulations.
- Formulate guidelines related to Civil Rights laws.
- Identify specific management actions to avoid liability in areas of food and property.
- Establish legal guidelines with regard to employee selection, wages and union relations.
- Outline procedures to reduce crimes against the business.
- Outline tests for the legality and enforceability of contract requirements in food service.
- Discuss the legal aspects of lodging and food-service franchising.

3 Credits  3 Weekly Lecture Hours

HRM 253  Food Service Management
The procedures, practices and methods of food service operational management are presented in detail. The following topics are discussed: menu planning, pricing, merchandising, food purchasing, receiving, storage, issuing, inventory and controls. Kitchen supervision and design (workflow); employee training, labor cost/payroll analysis are topics of discussion. Budgeting theory and cost analysis are the foundations of this course.

Upon successful completion of this course, students should be able to:
- Prepare and serve various icings.
- Employ garnishing that makes a meal more attractive to the eye.
- Prepare toast products including pastries, pies, quick breads, cakes and cookies.
- Prepare various soups.
- Identify and prepare various types of pasta and sauces.
- Identify and cook various types of shellfish and fish.
- Identify and prepare various hot/cold sauces and soups.
- Identify various cuts of meat, poultry, fish and prepared items. Breakfast breads and rolls, pastries, Lola's sousages.
- Identify and prepare vegetable stocks.
- Identify various cuts of meat, poultry, fish and dessert items. Breakfast breads and rolls, pastries, Lola's sousages.
- Identify and prepare various foods using poach, bake, fry, deep-fry, roast and saute methods.
- Develop a standardized recipe.
- Use a recipe, convert to higher/lower yields, use metric measurements and determine recipe costs.
- Build a simple menu and analyze its nutritional content.
- Prepare various foods using poach, bake, fry, deep-fry, roast and saute methods.
- Prepare basic stocks and hot/cold sauces and soups.
- Prepare salads and salad dressings as appetizers, main courses and desserts.
- Prepare simple desserts.
- Prepare simple breads and rolls.
- Prepare daily items and hot beverages.

3 Credits  3 Weekly Lecture Hours
This course emphasizes the use of standardized recipes, work improvement techniques, menu pre-costing/pricing in the planning of quantity foodservice operations. Discussions include catering, on/off premise event planning, sales and marketing practices and operational reports/record keeping. Students will plan and serve a quantity food event.

Upon successful completion of this course, the student should be able to:
• Use formulas in determining food yields and perform recipe conversions for large groups.
• Eliminate unnecessary work in a quantity food situation through the use of continuous process improvement.
• Use banquet/catering management practices, policies and procedures as they relate to planning, organizing, staffing and controlling a large party/event.
• Explore the current computer software designed for catering management.
• Plan, serve, and cost a special event for a large party.

Prereq. HRM 100  
3 Credits 3 Weekly Lecture Hours

HUM 254  Quantity Foods and Catering

This course is designed to introduce students, through a broad overview, to the nature of the art, people who make art, the various forms art takes and to the importance of art in our everyday lives. Students consider the role of the artist in society and how that role changes historically. Issues such as aesthetics, creativity and perception, and what it means to be a visually literate patron of the arts will be explored. A thorough introduction to the visual elements and principles of design will help students to form some guidelines for analysis and criticism in such areas as drawing, painting, photography, film, video, sculpture, architecture, crafts, environmental design, theater, dance and music.

Upon successful completion of this course, students should be able to:
• Identify several themes and purposes of art.
• Identify the visual elements and apply them in analysis of various two-and three-dimensional media.
• Identify the principles of design in art.
• Apply principles of design and personal aesthetics to criticism and analysis of various art media.
• Demonstrate an understanding of a comprehensive list of terms common in the art world and apply those terms in written criticism.
• Demonstrate a knowledge of a variety of roles artists have assumed in society.
• Demonstrate a knowledge of the traits characteristic of these artists and their styles.
• Demonstrate a knowledge of tools, methods and materials used in a broad spectrum of two-and three-dimensional media.
• Demonstrate a sense of the chronological history of the arts.

Prereq. ENG 100  
3 Credits 3 Weekly Lecture Hours

HUM 106  Dante Alighieri’s Inferno Special Studies

This course introduces students to the first book of Dante Alighieri’s ‘Divina Commedia’, i.e. Inferno (Hell).

Upon successful completion of this course, students should be able to:
• Recognize concepts, beliefs and symbols and historical facts of Medieval Europe and medieval Christianity.
• Understand how some popular Christian value became part of European and American culture.
• Understand some aspects of Italian culture and the impact of poetry and literature on individuals and the world.
• Contribution of Dante and the Florentine culture to the diversity of human culture (rewrite this one)

3 Credits 3 Weekly Lecture Hours

HUM 110  Humanities and the Arts I

Students survey the creative works of man through the ages: Greek-Roman Classical, Medieval, Renaissance, Baroque. Upon successful completion of this course, students should be able to:
• Relate cultural patterns to major periods in the arts.
• Explain the major reasons-historic, sociologic, economic, aesthetic-for the emergence of various cultural patterns.
• Trace the flow of cultural patterns of the present from the past into the future.
• Discuss the major aesthetic principles of poetry, prose, painting, music, architecture and sculpture.
• Compare and/or contrast the characteristics of the major periods of the arts.
• Find a richer life experience through a deeper involvement with the arts.

Prereq. ENG 100  
3 Credits 3 Weekly Lecture Hours

HUM 120  Humanities and the Arts II

Students survey some of the creative works of man through the ages: Romantic, Realistic, Impressionistic, Modern. Upon successful completion of this course, students should be able to:
• Relate cultural patterns to major periods in the arts.
• Explain the major reasons-historic, sociologic, economic, aesthetic-for the emergence of various cultural patterns.
• Trace the flow of cultural patterns of the present from the past into the future.
• Discuss the major aesthetic principles of poetry, prose, painting, music, architecture and sculpture.
• Compare and/or contrast the characteristics of the major periods of the arts.
• Find a richer life experience through a deeper involvement with the arts.

Prereq. ENG 100 and REA 100  
3 Credits 3 Weekly Lecture Hours

HUM 141  Film Language

This course is intended to engage students in an analytical study of the film medium, to help them relate the art of film to their lives and their language and to stimulate their appreciation of the visible world. The course includes a brief survey of film history, a study of the subject matter and bias of the documentary film and visible forms of poetry in the art film.

Upon successful completion of this course, students should be able to:
• Identity types of films.
• Recognize stages in film history.
• Identity elements of cinematic technique.
• Discuss the aesthetics of film.
• Recognize the existence of varying critical approaches.
• Recognize a good film.

Prereq. ENG 100  
3 Credits 3 Weekly Lecture Hours

HUM 142  American Cinema

This introductory course in film studies surveys American motion pictures as an industry, a form of artistic expression and a powerful cultural and societal influence. Students taking this course as distance learning should be aware of its independent study aspects.

Upon successful completion of this course, students should be able to:
• Demonstrate a familiarity with American film history from the silent screen to the present.
• Demonstrate a knowledge of the basic technical and critical vocabulary of motion pictures.
• Apply that vocabulary to understand artistic expression in motion pictures.
• Demonstrate an understanding of the fundamentals of the movie industry’s economic structure as it evolved through the twentieth century.
• Demonstrate an informed view of “realism” in motion pictures in order to avoid passive acceptance of what is presented on the screen.

Prereq. ENG 100  
3 Credits 3 Weekly Lecture Hours

HUM 160  Introduction to World Religions

This course introduces students to the major religions of the world: Hinduism, Buddhism, Judaism, Christianity and Islam. Upon successful completion of this course, students will be able to:
• Explain the developmental stages of each of the five major religions.
• Evaluate the principal tenets of each of these belief systems.
• Describe the most important rituals of each of these religions.
• Analyze the relationships that exist among these religions.

Prereq. ENG 100 and REA 100  
3 Credits 3 Weekly Lecture Hours
HUM 161  Eastern Spiritual Traditions
Special Studies
In this class we study/discuss the ethical, spiritual and practical foundations of HINDUISM, BUDDHISM, and Taoism in order to introduce the students to the rich philosophical traditions of South and East Asia, as well as their role in the human search for Truth.

Some class time will be devoted to familiarization with the meditation techniques of these traditions. Students are encouraged, but not required, to participate.

On successful completion of this course, students should be able to:

- Improve their reading comprehension and writing skills
- Improve their research skills (traditional and on-line)
- Understand the basic tenets of each tradition
- Acquire the ability to compare these traditions with the Judeo-Christian traditions to establish a true inter-religious dialogue

Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

HUM 162  Islam
Special Studies
This class is an in-depth analysis of the historical, religious, ethical and political foundations of Islam, including the life of the prophet Mohammed, the Qur'an and its various branches, especially Sunnism.

On successful completion of this course, students should be able to:

- Improve their reading comprehension and writing skills
- Improve their research skills (traditional and on-line)
- Understand the development and history of Islam
- Understand the relationship between Islam and the other Judeo-Christian traditions
- Recognize the important cultural and spiritual contributions of Islam

Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

HUM 163  Theology and PopularCulture
This course covers ways to identify theological elements in society, evaluate them critically, and determine the extent to which they inform our individual spirituality. In addition, it increases awareness of the deeper meanings in everyday life, particularly in television, film, and advertising. The students in this class will participate in hands-on learning experiences designed to enable them to evaluate and analyze various media for its theological content and its applicability to one's own theological perspectives.

On successful completion of this course, students should be able to:

- Explain how theology influences culture
- Identify theological themes found in various elements of current popular culture
- Evaluate and analyze a film, book, television program, advertisement, or other popular culture medium for its theological content or references to theological ideas
- Describe various theological ideas, their derivation, and how they are presented in modern cultural media
- Demonstrate the ability to apply a theological idea to the one's own life and relationship to the world

3 Credits 3 Weekly Lecture Hours

HUM 164  African Religions in America
Special Studies
This course focuses upon the widespread influence of the Central African cultures of the Congo and Angola upon Traditional African religious traditions in the Americas as well as the influence of these cultures on the Christianity of Americans of African descent. This course will provide an overview of the history of West Central Africans, their religious views and their role in the American Slave trade.

The development of African Traditional Religions of Central African (Bantu) origins in Brazil, Cuba, and North America both historical and contemporary will be detailed and discussed.

On successful completion of this course, students should be able to:

- Apply cultural anthropological perspective and understandings of comparative religion to African derived traditions in the Americas
- Demonstrate usage of the fundamental principles involved in the study of culture to African traditions in the Americas
- Explain the types of "world views" as found in various Afro-Brazilian, Afro-Caribbean and Afro-American traditions
- Describe the impact of the slave experience upon the cultural expression of Africans in the Americas
- Assess the effects of African cultural influences upon the student's own and his/her culture's values and popular culture

Prerequisite/Co-requisites:
Prior to enrolling in this course, students should have successfully completed English and Reading Placement test or successfully completed Developmental English (Eng 050), and Developmental Reading and Study Skills (REA). Please refer to college catalog.
3 Credits 3 Weekly Lecture Hours

HUM 166  Cross Cultural Attitudes Through Literature
Special Studies
This is a three-credit special studies humanities course that explores the issues of cultural shock through a survey of short fiction authored by famous international writers. Students will begin their course of studies by being introduced to the six phases of culture shock and their physical and emotional impact on the sojourner. As travelers become accustomed to the host culture they also become aware of the benefits and contributions each culture makes to the global community. Students will enhance classroom readings and discussions by experiencing their personal cultural immersion in the daily lifestyle of the Italian people.

On successful completion of this course, students should be able to:

- Understand the global importance of adjusting and functioning within another culture
- Identify the different patterns of being foreign" as defined by Kalervo Oberg, Gullhorn and Gullhorn, and Robert Kohls
- Identify problems associated with living in another culture by reading selected pieces of literature that contain the theme of culture shock
- Demonstrate knowledge of vocabulary associated with the different phases of culture adaptation: sub-culture, alienation, adaptation, melting pot, and "Ugly American"
- Understand the potential danger of stereotyping a culture
- Learn to adapt to living and studying in a different culture
- Express in standard written English and college level discussion the negative and positive experiences in a foreign culture
- Identify and contrast the US and host cultures in terms of religion, family, work ethic, consumerism as well as environment issues
- Research authors backgrounds, world views, and writing styles
- Become familiar with basic literary terms such as plot, time, place, character, setting, climax, narrator, point of view and audience
- Understand the impact of diversity as it is experienced personally

Prerequisite/Co-requisites:
English Composition I or its equivalent or by permission of the instructor.

Prereq. ENG 100
3 Credits 3 Weekly Lecture Hours

HUM 167  Introduction to Judaism
Special Studies
This course examines the history, development, religious practices and rituals, and social issues of Judaism. It includes such topics as the Hebrew bible and literature (Tanakh, Talmud, Apocrypha), Jewish theology, mysticism, various major sects (Orthodox, Conservative, Reformed, Reconstructionist, Sephardic, Karaites, Chasidim), symbols, and sacred places.

On successful completion of this course, students should be able to:

- Demonstrate an understanding of the rudiments of the Jewish faith
- Explain various fundamental differences between Judaism and other major world religions
- Identify the various sects of Judaism and their respective practices
- Explain the historical development of Jewish theology
- Describe salient cultural and spiritual contributions of Judaism

Prereq. HUM 160 Recommended
3 Credits 3 Weekly Lecture Hours

HUM 171  Western Myths
This writing-intensive course surveys ancient and modern myths that originated in the Western Hemisphere (the Near East, Europe, Africa and North America) and that still have impact on our self-concepts or our ideas of society. Narrative myths are studied as well as their interpretations in visual art and music. Beginning with a focus on classical Greek mythology, the course uses literature, art, music and film to evaluate mythology's place in helping us understand the human condition. Readings vary from semester to semester, but may include native American and African folk tales, Beowulf and Norse myths, and the mythic implications of Frankenstein, Romeo and Juliet, or the tales of King Arthur.

On successful completion of this course, students should be able to:

- Identify and paraphrase a variety of Greek, Biblical, Old English and Native American myths.
- Trace the changes in those earlier myths as they have been influenced by industrialization, technology and psychology
- Compare myth-based fiction (such as Frankenstein) with its current impact as seen in film and television
- Identify versions of myths in visual art and music.
- Analyze in writing and discussion the differences between the original myths and their current manifestations.

Prereq. ENG 100
3 Credits 3 Weekly Lecture Hours

HUM 173  Eastern Mythology
This course surveys major mythologies of the East such as Indian, Tibetan, Chinese, Japanese, and lesser-known ones such as those of the aboriginal peoples of Australia and New Zealand. The study of the myths will serve as an introduction to the diverse cultures encountered—their history, religion, philosophy, art, music, literature, values and outlook on life. Further, the course will clarify the systems of thought underlying some of humankind's earliest perceptions of life and the universe.

Upon successful completion of this course, students should be able to:

- Identify and paraphrase a variety of Eastern myths.
- Recognize the various myths/themes in their modified forms in the various mythologies.
- Define Eastern perceptions of such concepts as Creation, Life, Death, Truth, Good, Evil and Androgyny.
DELAWARE COUNTY COMMUNITY COLLEGE

HUM 205      Latin American Studies Special Studies
This course provides an overview of the Latino-American cultural heritage. Based on elements from anthropology, culture (both folk and popular), film, folklore, language and linguistics, theater and drama, and literature, the course examines various cultural traditions within Latino-American society.

Upon successful completion of this course, students should be able to:

• Define thefollowing: classical, humanism, symmetry, balance, harmony, order, monumental.
• Explain the concept of patronage as it was expressed in Florence.
• Understand the struggle between the two political parties, the Guelphs and the Ghibellines, and their impact on Florence and Siena.
• Understand the geographical and political framework of Italian city-states and their competiveness.
• Explain the ‘castello’ as a source of information about artists and their patrons.
• Identify the major architectural and sculptural achievements in Florence 1400-1460.
• Identify the major artists and their paintings in Florence 1400-1460.
• Identify the major works of Leonardo da Vinci, Michelangelo and Raphael in the late 15th Century.
• Demonstrate an understanding of Brunelleschi’s perspective system.
• Demonstrate a broad understanding of the Renaissance genius as a phenomenon in Renaissance Italy.
• Explain the social, cultural, political and geographical conditions that caused the arts to flourish in Florence.
• Make as many on-site visits to Florentine artistic and cultural landmarks as possible.
• Experience directly, the rich cultural legacy of Renaissance humanism through the visual arts of Renaissance Florence.

Prereq. ENG 112
3 Credits 3 Weekly Lecture Hours

HUM 210      Renaissance Florence
In a hands on holistic approach to learning, students will have the opportunity to study the Renaissance as it flourished in Florence, the Italian city most associated with the birth of that historic era and its emphasis on humanism. Students will be introduced to the history of Florence from its Roman beginnings to the Sixteenth Century. The study of Renaissance art will begin with an overview of the ideas and ideals of the classical world and end with the transition to Manerism. Classroom lectures will be enhanced by on-site visits to both sacred and secular places that house Renaissance art and which are demonstrations of Renaissance art themselves.

The changing role of the artist in society will be a topic of study as will the larger themes and purposes of art, the vocabulary of art and the principles of design. Living in Florence should provide students a first hand knowledge of the Italian people, their culture and their place in the art history of the Western world. Upon successful completion of this course, students should be able to:

• Identify and describe significant events and factors that have characterized and influenced the various traditional, folk and popular cultures of Latinos residing in the United States.
• Identify major Latino personalities and their contributions to culture in the United States.
• Demonstrate the ability to describe the cultural experiences of Latinos as residents and citizens in the United States.
• Describe the contributions of Latinos to American culture.
• Apply course concepts and use appropriate terminology when describing the Latino cultural experience.
• Conduct a research project and make a presentation on a significant topic or issue relating to Latino-American cultural Recommended Course: Latin-American History (HIS 253)

Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

HUM 290      The Art and Architecture of Renaissance Florence
The changing role of the artist in society will be a topic of study as will the larger themes and purposes of art, the vocabulary of art and the principles of design. Living in Florence should provide students a first hand knowledge of the Italian people, their culture and their place in the art history of the Western world. Upon successful completion of this course, students should be able to:

• Identify the emotional and physical symptoms and causes of professional burnout along with the methods designed to prevent it.
• Demonstrate how knowledge of oppression, privileges, discrimination, and ethnic identity relate to the skills necessary to perform the tasks of a culturally competent human service worker.
• Identify the major artists and their paintings in Florence 1400-1460.
• Identify the major works of Leonardo da Vinci, Michelangelo and Raphael in the late 15th Century.
• Demonstrate an understanding of Brunelleschi’s perspective system.
• Demonstrate a broad understanding of the Renaissance genius as a phenomenon in Renaissance Italy.
• Explain the social, cultural, political and geographical conditions that caused the arts to flourish in Florence.
• Make as many on-site visits to Florentine artistic and cultural landmarks as possible.
• Experience directly, the rich cultural legacy of Renaissance humanism through the visual arts of Renaissance Florence.

Prereq. ENG 112
3 Credits 3 Weekly Lecture Hours

HUS 101      Introduction to Human Services
This is a one semester introduction to human services and the major policies and practices that are used to understand human strengths and challenges. The course explores the skills, values and knowledge based needed to effectively work as a culturally competent, human service professional in a multidisciplinary setting.

Upon successful completion of this course, students should be able to:

• Explain the historical foundation and current role of the Human Service Worker.
• Describe the structure and content of a professional helping relationship.
• Identify interventions based on the major case management and counseling models in the field of human services.
• Demonstrate the skills necessary for interviewing individuals in a social service or agency setting.
• Understand the limitations of implementing services in social service systems.
• Explain the impact of the shift of responsibility for social welfare programs from the federal, to the state, to the local government, in the United States.
• Demonstrate how knowledge of oppression, privileges, culture, racism, institutional racism, stereotypes, discrimination, and ethnic identity relate to the skills necessary to perform the tasks of a culturally competent human service worker.
• Plan and design an intervention program targeted to a specific population’s need for group services.
• Evaluate the ethical dilemmas surrounding the concepts of self-determination, mandated treatment, HIV/AIDS, child abuse, the right to die and class differences between the worker and the client.
• Identify the emotional and physical symptoms and causes of professional burnout along with the methods designed to prevent it.

Prereq. ENG 050, REA 050 or pass test
3 Credits 3 Weekly Lecture Hours

HVA 100      Introduction to Heating, Ventilating, Air Conditioning and Refrigeration Electrical Fabrication
This course provides a background and understanding of electron flow, Ohm’s law, wire sizing, system controls, types of motors, AC/DC theory and understanding of the use of meters and equipment components associated with this field. The math necessary to perform the calculations in this course is covered as an integral part of instruction. The course includes theory as well as practical shop applications.

Upon successful completion of this course, students should be able to:

• Define electrical circuit fundamentals.
• Identify circuit symbols on a schematic diagram or plan.
• Describe the difference between parallel and series circuits. Define the relationship among voltage, amperage and resistance.
• Perform calculations using Ohm’s law.
• Demonstrate the use of electric meters, their operation and application.
• Identify current carrying capacity of conductors, use wire sizing charts and properly size conductors for system connections.
• Cite the hazard potential and safety procedures when working on equipment.
• Describe the types of motors used within the HVAC&R field, including both theory and operation.

2 Credits 1 Weekly Lecture Hours 2 Weekly Laboratory Hours

HVA 101      Introduction to Refrigeration and Air Conditioning
This course covers the design and functions of the major components of residential and commercial refrigeration and air conditioning. The refrigeration cycle is reviewed and heat transfer discussed. Particular attention is placed on use of hand tools, techniques of installation and service of equipment.

Upon successful completion of this course, students should be able to:

• Produce a tubing project that will incorporate the various types of tubing connections and soldering processes used in the industry.
• Attach the refrigeration manifold to a refrigeration system via process adapters, tags, a line or service valves.
• Position compressor service valves for any of the following conditions: evacuation, charging, operation, applications, oil charging and isolation of various parts of the system.
• Identify and describe functions and parts of refrigeration system.
• Detail the fundamentals of refrigeration and refrigerant cycle.

Prereq. HVA 100
2 Credits 1 Weekly Lecture Hours 2 Weekly Laboratory Hours

HVA 103      Advanced Refrigeration and Air Conditioning
This course provides students with a background and understanding of commercial refrigeration design, installation and service. The course materials also address troubleshooting techniques of components with special emphasis on refrigerant control devices, compressors, reducing valves and dryers. Air conditioning fundamentals covered include psychrometer, air flow and duct sizing. Superheat and sub cooling adjustments for both refrigeration and air conditioning are covered. The math necessary to perform the calculations in this course is covered as an integral part of instruction.
HVA 108 Duct and Sheet Metal Fabrication and Installation - Residential
This course is designed for students who plan a career in the heating, ventilation, and air conditioning industry. Topics covered in this course include: safety, duct takeoff, sheet metal calculations, costing, installation, heat loss/gain, and blueprint reading.
Upon successful completion of this course, students should be able to:
- Read and use a duct factor chart.
- Utilize a duct take-off form.
- Identify cost sheet metal duct, duct liner and installation.
- Fabricate air and splitter dampers and drivers.
- Cut openings in duct for take-off collars.
- Join duct sections.
- Apply the proper method of duct sealing.
- Utilize tools of the trade.
- Perform an oblique drawing of a duct system.
- Read a blueprint.
- Install grilles, registers, and diffusers.
- Install flexible connectors.
- Identify NFPA-54 guidelines for venting gas-fired appliances.
- Identify NFPA-31 guidelines for venting oil-fired appliances.
3 Credits 3 Weekly Lecture Hours

HVA 109 HVAC Troubleshooting
This course presents the sequence of operation in the troubleshooting of residential air conditioning and gas-fired warm air systems. The materials and lab demonstrations promote the safe use of electrical, temperature, and pressure gages to facilitate a system diagnosis and recommended solution.
Upon successful completion of this course, students should be able to:
- Collect and analyze data with the owner.
- Use proper tools safely to find problems.
- Operate the HVAC system to verify safe, efficient services.
- Record operating pressures, temperatures, airflow, and identification numbers.
- Develop a cost-effective plan of action.
- Demonstrate safe working habits
- Troubleshoot flow charts.
- Identify low voltage systems.
- Identify diagram circuits.
- Utilize pressure gauges.
- Utilize electrical meters
- Use combustion analyzer.
- Recognize system hazards.
- Review plan of action with owner.
Pre req. HVA 100, HVA 200, MAT 110
3 Credits 3 Weekly Lecture Hours

HVA 110 Hydronic Heating Systems
This course is an introduction to hydronic hot water heating. The course is designed to cover residential and light commercial systems, which involves many different piping disciplines. Also covered are design and building techniques of hot water heating systems.
Upon successful completion of this course, students should be able to:
- Review safety rules.
- Explain the principles of heat transfer.
- Detail boiler design and construction.
- Calculate heat loss/gain.
3 Credits 3 Weekly Lecture Hours

HVA 111 Advanced Duct and Sheet Metal Fabrication/Installation - Commercial
This course is designed for students who plan a career in the HVAC industry. This course covers safely, duct takeoff, duct support systems, installation techniques, duct design, sizing and layout, blueprint reading, and venting of heating appliances.
Upon successful completion of this course, students should be able to:
- Read a blueprint.
- Perform oblique drawings of a duct system.
- Know the difference between supply air and return air duct systems.
- Identify the different types of duct hangers, clamps and connectors.
- Identify the need for duct reducers.
- Identify various duct sealing techniques.
- Cut a perfect 10-inch diameter hole in a duct.
- Connect various duct fittings.
- Make branch connections.
- Properly install flexible duct.
- Install flexible connectors.
- Perform an air test and balance.
- Apply external duct insulation.
- Apply and repair duct liner.
- Install grilles, registers and diffusers.
- Identify NFPA-54 guidelines for venting gas-fired heating appliances.
- Identify NFPA-31 guidelines for venting oil-fired heating appliances.
Pre req. HVA 112
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours
Upon successful completion of this course, students should be able to:

- Operate a residential boiler.
- Recognize and list safety hazards and concerns.
- Use tools to determine draft and combustion.
- Identify mechanical devices including pumps.
- Explain fluid dynamics including pumps.
- Install and wire a zone control module.
- Explain principles of steam.
- Identify types of electrical circuits for zoning.
- Detail basic control schemes.
- Explain hydronic circuits.
- Replace electric mechanical components.
- Identify circuits on diagram.
- Use electric meter.
- Recognize system hazards.
- Review plan of action with owner.

Preparq. HVA 110, MAT 110

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

HVA 200 Advanced HVACR Electrical Fabrication

This course will introduce the student to the operating and safety controls in refrigeration and air conditioning equipment. Also addressed will be the use and application of schematic and ladder wiring diagrams and introduce the proper troubleshooting procedures of residential and light commercial systems.

Upon successful completion of this course, students should be able to:

- Detail the system operation and sequence of operation for typical refrigeration and air conditioning equipment.
- Identify common problems with contractors and relays and determine proper replacement procedures when defective components are found.
- Explain control circuits, their use and potential problems.
- Troubleshoot refrigeration and air conditioning control systems and isolate the faulty components with the system.

Preparq. HVA 100

2 Credits

1 Weekly Lecture Hours

2 Weekly Laboratory Hours

HVA 201 Refrigerant Certification

This course will instruct the students about the harmful effects of chlorofluorocarbons on the ozone, production limitations and phaseout of CFCs and HCFCs, and recycle, reclaim and recover. Procedures will be demonstrated in theory and active practice.

Upon successful completion of this course, students should be able to:

- Detail the chemical properties of CFCs and HCFCs.
- Cite the claims by the scientific community concerning the potential hazards of chlorofluorocarbons and hydrochlorofluorocarbons to the environment.

HVA 113 Hydronic Troubleshooting

This course demonstrates the control functions of residential hydronic heating systems. The course materials address troubleshooting techniques, electrical and mechanical operations, and a review of basic steam and hot water design schemes. Service, safety, combustion analysis and cost-effective repair are included.

Upon successful completion of this course, students should be able to:

- Detail the system operation and sequence of operation for typical hydronic heating equipment.
- State the use and operation of recover, recycle and reclaim equipment.
- Service refrigeration and air conditioning without venting refrigerant into the atmosphere.
- Identify, select and install proper pipe for various piping systems.
- Recognize system hazards.
- Review plan of action with owner.

Preparq. HVA 103

2 Credits

1 Weekly Lecture Hours

2 Weekly Laboratory Hours

HVA 202 Oil/Gas Burner Service

This course includes review of heat transfer products and their use in institutional and commercial equipment. High efficiency heating equipment, principles and operation, sequence of operation and oil and gas burner technology will be addressed.

Upon successful completion of this course, students should be able to:

- Identify three methods of heat transfer.
- Cite the principles of induction and convection of high-efficiency heating equipment.
- Detail furnace design and construction.
- State the function of safety controls, their purpose and operation.
- Describe potential venting problems with high-efficiency equipment and review the methods to prevent problems from occurring.
- Depict hydronic heating-system components and design.
- Service oil and gas burners.

2 Credits

1 Weekly Lecture Hours

2 Weekly Laboratory Hours

HVA 203 Heat Pump Systems

This course is designed to present practical fundamentals, recommended service procedures and start-up of heat-pump systems. The course is structured to introduce the basics of each topic and then move into the more technical aspects of the topic. Topics covered include troubleshooting, standard service procedures and earth-coupled, water source heat-pump systems.

Upon successful completion of this course, students should be able to:

- Discuss the operation of a heat pump.
- Discuss the operation of heat-pump components and control.
- Detail the operation of water-source heat-pump systems.
- Perform calculations necessary for proper heat-pump system design.
- Demonstrate installation and start-up of a heat-pump system.
- Troubleshoot a heat-pump system.

2 Credits

1 Weekly Lecture Hours

2 Weekly Laboratory Hours

HVA 204 Blueprint Reading for HVAC (IMM) Interactive Multimedia

(IMM) Interactive Multimedia

IMM 100 Interface Design Using Director

This course introduces students to developing user interfaces using Macromedia Director. Learn the process of designing graphical user interfaces (GUIs) that are easy to use and easy to learn. Topics include human/computer interaction (HCI), metaphors, screen design basics, interfaces for the PC and the Web, and an interface design development process. Students also learn to analyze and evaluate user interface requirements and to design effective and efficient multimedia programs using Macromedia Director.

Upon successful completion of this course, students should be able to:

- Explain why the user interface is a critical component of computer-based training (CBT) and Web programs.
• Discuss the goal of human/computer interaction.
• Compare and contrast Web interfaces and PC interfaces.
• Utilize screen design basics such as color and layout.
• Analyze and evaluate user interface requirements.
• Use an interface design process model.
• Design CBT and Web programs employing user-centered design techniques.
• Demonstrate a working knowledge of the instructional design process.
• Add multimedia elements to Director movies.
• Use Director to construct interactive applications.
• Use Director’s scripting language, Lingo, to enhance interactivity.
• Identity solutions to real-world, instructional-design problems.
• Apply the necessary steps for developing multimedia/WWW applications, starting from idea to design, through instructional and interface design, storyboarding and file structuring.

Upon successful completion of this course, the student should be able to:
• Define multimedia and identify its components.
• Demonstrate a fundamental knowledge of the WWW.
• Identify the latest multimedia/WWW hardware and software requirements.
• Determine how and where multimedia and WWW technologies are used.
• Scan images with a flat-bed scanner.
• Capture photographs using a digital camera.
• Use Adobe Photoshop to retouch images and create graphics for incorporation into a multimedia authoring program.
• Apply the principles of design such as color and layout.
• Demonstrate the use of Photoshop palettes.
• Demonstrate the use of Photoshop selection and painting tools.
• Demonstrate the use of Photoshop filters, opacity and blending modes.
• Demonstrate the ability to use Photoshop to create multimedia and Web documents.
• Demonstrate the ability to use ImageReady to create hotspots, slices and animation.
• Demonstrate the ability to use ImageReady to add rollovers to graphics.
• Demonstrate the ability to use ImageReady to create Web documents.
• Demonstrate the use of Fireworks panels.
• Demonstrate the ability to use Fireworks to create hotspots, slices and animation.
• Demonstrate the ability to use Fireworks to add rollovers to graphics.
• Demonstrate the ability to use Fireworks to create Web documents.

Upon successful completion of this course, the student should be able to:
• Define scripting languages, their purpose and how to integrate them into HTML.
• Differentiate between web scripting technologies such as JavaScript, Perl/CGI, ASP and PHP.
• Discuss the advantages and disadvantages of using various scripting languages.
• Write scripts using string, numeric, Boolean variable types, expressions and arithmetic operators.
• Write user-defined functions.
• Define and use objects, properties, methods and events.
• Incorporate conditional and repetition structures into scripts.
• Test and debug scripts.
• Design and create a relational database using MySQL.
• Add, edit, delete and search records in a MySQL database from the web with PHP.
• Add multimedia elements to Flash movies.
• Add scripting language, Action Script, to create an interactive movie, using Flash.
• Produce an animated Web site using Flash.
• Deliver content for the Web using Shockwave.

This course is designed to introduce students to the development of interactive multimedia programs using Macromedia Flash. Flash is the development software to design and develop low-bandwidth animations and presentations. Using this software application, students learn to develop interactive multimedia products for CD-, DVD-ROMs and the World Wide Web.

Upon successful completion of this course, students should be able to:
• Discuss internet limitations.
• Identify digital image types: vectors and bitmaps.
• Add multimedia elements to Flash movies.
• Add scripting language, Action Script, to create an interactive movie, using Flash.

This course explores the more sophisticated capabilities and tools of Macromedia Authorware including custom buttons, interaction icon, branching options, judging, navigation icon, framework icon, calculation icon, functions and variables, decision icon and packaging.

Upon successful completion of this course, students should be able to:
• Demonstrate the use of Ulead Video Editor to record and edit video and to create digital video for incorporation into multimedia authoring program.

This course provides students with the skills needed to design and develop interactive multimedia materials for stand-alone, network and WWW use. Students learn several of the currently available tools used to produce audio and video for multimedia applications, including Sonic Foundry Sound Forge XP and Ulead Media Studio. This course also includes an introduction to Macromedia Authorware, which is used to develop multimedia projects employing student-selected themes.

Upon successful completion of this course, students should be able to:
• Demonstrate the use of Sound Forge to record and edit sound/music/voice to create digital audio for incorporation into a multimedia authoring program.

This course provides students with the skills needed to design and develop interactive multimedia materials for stand-alone, network and WWW use. Students learn several of the currently available tools used to produce audio and video for multimedia applications, including Sonic Foundry Sound Forge XP and Ulead Media Studio. This course also includes an introduction to Macromedia Authorware, which is used to develop multimedia projects employing student-selected themes.

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Upon successful completion of this course, students should be able to:
• Demonstrate the use of Ulead Video Editor to record and edit video and to create digital video for incorporation into multimedia authoring program.
INS 100 Introduction To Insurance
This course introduces students to fundamentals of insurance with emphasis on claim functions as part of the industry structure.
Upon successful completion of this course, students should be able to:
- Characterize fundamental insurance concepts of reimbursement, underwriting and claims
- Analyze the structure of the insurance industry and the role of government insurance
- Articulate the role of insurance in our society, including the ethical guidelines for adjusters
- Define the principles of risk management
- Describe the functions of the claims adjuster and of claims adjusting.
3 Credits 3 Weekly Lecture Hours

INS 201 Evidence and Investigative Principles
A study in the conduct, principles and procedures relative to investigation.
Upon successful completion of this course, students should be able to:
- Identify evidence as used in the conduct of civil investigation
- Provide an overview of the rules and principles of evidence
- Identify and explain hearsay evidence and contrast the traditional common law exceptions to the hearsay rule
- Research and develop a technique based on a scientific method whereby a structured inquiry may be conducted
- Develop an investigative narrative report for the following types of insurance claims: vehicular traffic accident, arson, commercial and personal property, malpractice, product liability, workers compensation and marine
3 Credits 3 Weekly Lecture Hours

INS 211 File Management and Negotiations
An application course in file management and control with emphasis on psychological principles of human behavior, motivation, verbal/non-verbal communication and other general barriers to successful negotiations.
Upon successful completion of this course, students should be able to:
- Develop the process and procedures to be followed from the inception of the claim through the investigation, evaluation, negotiation and settlement phase
- Explain how a knowledge of the concepts of psychology aid in preparing for negotiation as it requires an understanding of human behavior
- Identify and explain the various strategies employed in negotiations
- Discuss the tactics of persuasion and other tactics employed in dealing with resistance during the course of negotiations
3 Credits 3 Weekly Lecture Hours

INS 221 Investigation of Death and Injury
A course directed to medical/legal investigation of death under a variety of circumstances and applicable tort actions.
Upon successful completion of this course, students should be able to:
- Provide a forensic definition of death
- Differentiate among cause, manner and mechanism of death
- Discuss the law generally with respect to trauma and disease in civil, tort and worker’s compensation cases
- List the four major categories of death due to asphyxia
- Describe the differences and similarities in the investigation of death by asphyxia and death by drowning
- Provide a correlation of postmortem finds with road accident in explaining causes of death and/or the accident
- Explain why it is necessary to identify and separate various types of lesions
- List and explain some general procedures to be followed during an autopsy
- Identify the various aspects and reasoning of the medicolegal autopsy report
3 Credits 3 Weekly Lecture Hours

INS 222 Arson Investigation
This course enables students to become familiar with the problem inherent in determining the causes of fires, recognition of arson, preservation of evidence and successful prosecution of those responsible.
Upon successful completion of this course, students should be able to:
- Cite the organization established to investigate causes and types of arson
- Depict the role of fire personnel in arson suppression
- Detail the significant scientific aids available to the fire investigator
- Outline the urban and suburban incendiaric fire patterns that have increased in the last decade
- Conduct interviews to establish fire causes
- Write a comprehensive permanent record of a case and provide guidance in the preparation and conduct of litigation
- Develop skills essential to offering expert testimony in civil and criminal arson cases
3 Credits 3 Weekly Lecture Hours

INS 223 Fraud Investigation
This forensic science course applicable to investigation and case preparation of losses due to crimes of theft generally. Topics include: home and commercial burglaries, employee theft, retail theft, cargo and computer theft, embezzlement/deceptive business practices, fraud, white-collar and systematic criminality.
Upon successful completion of this course, students should be able to:
- Define the legal term of burglary
- Identify the burglar and his skills, and differentiate between residential and commercial burglaries as they apply to the burglar’s target selection, equipment, methods of entry, selection of items and disposal of goods stolen
- Define the term ‘theft’ and explain completely modus operandi as it relates to auto theft, theft from building, employee theft, shoplifting and cargo theft
- Provide an investigative format for the casualty claims adjuster in handling losses due to burglary and theft
- Identify the governmental, non-governmental, private and public sources of information when preparing a personal background investigation
- Discuss victim-offender relationships, vulnerable victims, reactions to burglary and theft, resistance, reporting of burglary and theft, and victims in relation to police officers as it is relevant to the claims adjuster’s investigation
- Explain how and why the professional claims investigator of burglary/theft claims should work closely with the underwriting department of an insurance company
3 Credits 3 Weekly Lecture Hours

INS 230 Liability Insurance and Claims Adjusting
This course addresses the fundamental principles of tort law application. Evaluation of each type of claim in light of statute law and defenses to liability area are also addressed. Topics include: agency, bailments, idles, carriers and cargo, products, automobiles, professional liability, employer’s liability and worker’s compensation.
Upon successful completion of this course, students should be able to:
- Read, interpret and explain the liability sections from some typical liability contracts.
- Explain the common-law articulation of rights, duties and remedies with respect to owners of property.
- List the three major classifications of torts—differentiate as to the duties, rights and remedies within each classification.
- Explain the following judicial modifications to the law of torts: fright without impact, mental anguish, consortium and the center-of-gravity rule.
- Explain the elements of a contract.
- Explain the fundamental principle of the law of agency.
- Discuss the evolution of worker’s compensation to its present state with regard to rights, benefits and administration.
- Trace the evolution of products liability law from the common-law holding of caveat emptor through application of the law of torts to present statutory modifications of the contract of sale.
- Explain the standards to which a professional is held for services rendered.
- Explain the law in terms of rights, duties, responsibilities, remedies and defenses for professional practitioners.
- Explain the law in terms of rights, duties, responsibilities, remedies and defenses to liability applicable to automobile operators, passengers and pedestrians.
3 Credits 3 Weekly Lecture Hours

INS 231 Seminar in Insurance Problems
This course is topical in nature and relevant to particular contemporary problems in producing insurance or adjusting claims. The primary purpose of studying problems, limitations or challenges is to learn how to overcome such issues as a practical matter. This course will provide an overview of the insurance marketplace. It is intended to help you prepare to take the Producer licensing exam or help you become familiar with Claims adjusting.
Upon successful completion of this course, students should be able to:
- Identify and explain the need for personal lines of insurance
- Know the ethical considerations in producing personal lines insurance
- Differentiate the differences in various lines of Accident, Life and Health insurance
- Prepare to take the Insurance Producer Exam
3 Credits 3 Weekly Lecture Hours
INS 233  Estimating Interior-of-Building Losses & Construction Costs
A course oriented to property-insurance claims principles including new construction methods materials required, current costs of materials, labor and application rates as a result of loss from fire, floods or other hazards.
Upon successful completion of this course, students should be able to:
• Identify at least five natural causes of exterior, interior and structural losses to buildings.
• Identify and explain at least 10 basic factors to be considered in estimating hours of labor, 10 overhead items chargeable to specific job operations and 10 non-chargeable items, and 10 basic considerations when estimating the cost of demolition and removal of debris.
• List at least 10 considerations in protecting property from further loss due to fire.
• Provide a checklist for setting up the final estimate of a building loss.
• Identify the conditions one can expect to find during a major catastrophe and discuss how estimating building losses are impacted.
• Discuss how building estimators play a special role in building losses of suspicious origin.
• Demonstrate a fundamental understanding and application of fractions, surface measurements, properties of circles, volume measurements, tables of weights and measures, and metric conversion factors in estimating.
• List, explain and demonstrate the six methods of electrical wiring.
• Differentiate in procedure and process estimating losses in single-family dwellings and condominiums.
3 Credits  3 Weekly Lecture Hours

INS 240  Property Insurance and Claims Adjusting
This course provides an orientation to the adjustment of the three broad classes of property: i.e. buildings, personal property and rights of possession and use. It also considers the work, authority, procedures, methodology and common problems relevant to first-party claims.
Upon successful completion of this course, students should be able to:
• List and identify the various types of property insurance policies.
• Trace the doctrine of insurable interest in its evolution from Great Britain to present-day United States.
• Identify the methods and advantages of standardization of insurance contracts.
• Describe the nature and appropriate use of various valuation standards utilized in measuring the value of different types of property and explain the procedure for adjusting personal property losses.
• Identify and explain the objectives, elements and nature of the most common property-loss claims investigations.
• Develop a set of procedures to verify estimates and explain the procedures for adjusting building-loss claims.
• Define personal property, identify at least 10 articles of personal property and provide an investigative format for the investigation of personal property claims.
• Explain the methods of determining insurable value in merchandising losses.
• Explain the duties, procedures and relationship of the claims representative and salver.
• Explain the purpose and importance of business-interruption insurance in covering particular types of indirect losses.
3 Credits  3 Weekly Lecture Hours

INS 244  Workers Compensation
This course covers the fundamentals of workers’ compensation laws and their applications
Upon successful completion of this course, students should be able to:
• Define workers’ compensation and comprehend its history and importance to our society.
• Apply and justify basic statutory provisions.
• Identify and analyze principles of covered employees and injuries.
• Analyze and compute benefit payments for compensation claims.
• Analyze workers’ compensation litigation procedures.
• Analyze economic loss problems, risk management and expense of insurance coverage’s.
• Identify applicable disability and injury compensation laws.
3 Credits  3 Weekly Lecture Hours

INS 250  Insurance Law
Upon successful completion of this course, students should be able to:
• Explain insurance law as it applies to policy coverage and interpretation.
• Apply policy provisions to specific factual situations.
3 Credits  3 Weekly Lecture Hours

INS 252  Insurance Litigation
This course is designed to have the successful student analyze the law that affects insurance.
Upon successful completion of this course, students should be able to:
• Identify concept of self by assessing needs, interests and values.
• Utilize self-assessment to determine the appropriateness of applying credit for prior learning to earn college credit.
• Analyze the information gained in the course to evaluate prior learning, including transfer of credit, credit by exam and portfolio development. Participants will 1) analyze their skills and knowledge, 2) appropriately utilize the DCCC college processes and resources, and 3) learn how to increase opportunities to succeed in college.
1 Credit

INT 100  Student Success
This course presents students with advanced theory and application in insurance adjusting including the basis of litigation arising from such situations.
Upon successful completion of this course, students should be able to:
• Analyze insurance policies written for individual, automobile, homeowners, inland marine, accident coverage and for commercial liability, vehicle, fire, property, workers’ compensation and umbrella coverage.
• Explain insurance law as it applies to policy coverage and interpretation.
• Apply policy provisions to specific factual situations.
3 Credits  3 Weekly Lecture Hours

INT 104  Promoting Academic Success Special Studies
This class gives high school students the opportunity to experience a college level course. Classes will be held at the post-secondary institution and students will have dual enrollment status.
Upon successful completion of this course, students should be able to:
• Develop ability to determine academic and vocational/technical options.
• Identify the differences between high school and other choices.
• Successfully learn to analyze the what, why and how tests are used.
• Identify internal and external resources in school and the community.
• Understand and appreciate your legal disability rights in school and in the community.
• Apply effective studying methods in high school and beyond.
Prerequisite: None
1 Credit  1 Weekly Lecture Hours
### NT 105 Arithmetic Review Special Studies

This course is designed for students with placement test scores falling in the upper level of the range for MAT 040 Basic Mathematics. It offers an intensive and interactive nine-day review of arithmetic and an introduction to college algebra. Topics include whole numbers, fractions and mixed numbers, decimals, ratios, proportions, and percents, and an introduction to DCCC’s Student Support Services. Upon successful completion of this course, students will be permitted to retake the Mathematics Placement Test, and with an appropriate score qualify for MAT 040 Developmental Mathematics.

Upon successful completion of this course, students should be able to:

- Add, subtract, multiply, divide, and round whole numbers.
- Simplify, add, subtract, multiply, and divide fractions and mixed numbers.
- Convert fractions, decimals, and percents.
- Find the missing number in proportions.
- Add, subtract, multiply and divide signed numbers (optional).
- Interpret simple bar graphs and pie charts involving the competencies above.
- Solve problems involving the competencies above and
- Access DCCC Student Support Services

Prerequisite: Score of at least 45 on the arithmetic section of the Mathematics Placement Test, or permission of the instructor.

1 Credit 1 Weekly Lecture Hours

### IST 101 Industrial Drive Systems

This course is designed to present the theory and practical applications associated with industrial drive systems. Specific instruction will be placed on the demonstration of knowledge and skills required of an Industrial Systems Technician. Students will learn how to analyze, operate, install, troubleshoot and maintain various mechanical systems utilizing belts, chains and drive shafts, and associated components such as bearings, seals, gears, couplings, sprockets, keys and linkages. Heavy emphasis is placed on mechanical drive arrangements where practical solutions are required. Students will also become familiar with drive units and speed control systems.

Upon successful completion of this course, students should be able to:

- Describe the terminology, design, function, and components of both belt and chain driven systems.
- Explain the function of caged belts, and synchronous belts and their benefits.
- Compare the varied types of drive and speed control systems used in industry.
- Define various types of chain lubrication methods, and demonstrate how to maintain each.
- Compare various types and applications of gera drives and their applications.
- Perform calculations involving ratios, shaft speed, and torque for a gear train drive system.
- Describe the function of chain drive components within given industrial drive systems, and specify a system for a given application.
- Select the appropriate belts, pulleys, chains and sprockets for a specific system installation.
- Describe the function, operation, safety features, lubrication, and maintenance requirements of a material handling conveyor system.
- Calculate pulley ratios as well as shaft speed and torque associated with a belt drive system and determine belt deflection for a given application.
- Calculate conveyor belt length and linear speed using multi-methods.
- Conduct job planning and perform routines to include lockout and tag out procedures for varied pieces of industrial process control equipment.
- Install and align a conventional v-belt drive system, a multi-belt drive system and describe the methods for measuring belt tension.
- Remove and install a chain sprocket and set chain sag for a given application.
- Demonstrate the installation and alignment of a single, and a multiple chain drive system.
- List various coupling design categories, and demonstrate coupling alignment using rim, face indicator methods.
- Specify, install, operate, troubleshoot and maintain a flat belt conveyor system.
- Start-up and operate a manually controlled processing system, an open loop control system, and a closed loop control system.
- Troubleshoot belt drive, chain, and coupling systems.

Prerequisite: IST 100 Coreq. TME 115

3 Credits 3 Weekly Lecture Hours

### IST 100 Introduction to Industrial Systems Technologies

This is a hands-on introductory course intended to acquaint students with basic skills and knowledge required as a part of the Industrial Systems Technology program. This course is specifically designed to provide knowledge and skills required for installing, maintaining, and replacing various process equipment and systems. Specific instruction in this class will cover moving and rotary equipment including terminology, function, components and purpose. Heavy emphasis will be placed on drives, belts, chains, gears, couplings, alignment, lubrication, packing and seals. Safety practices and procedures regarding the use of hand and power tools, equipment installation, repair and replacement will be stressed. The proper use of equipment and installation manuals and standards will be addressed. This course is recommended for students who have little or no industrial equipment experience.

Upon successful completion of this course, students should be able to:

- Identify motion equipment such as conveyors, pumps, drives, gears, etc.
- Select and install appropriate fasteners such as nuts, bolts, snap rings, pins, etc.
- Describe the primary function of motion equipment as it relates to a manufacturing or an industrial processing system.
- Describe and demonstrate various methods of shaft alignment.
- Research and explain manufacturer’s specifications, i.e., installation, operation, maintenance, service and repair.
- Define the criteria for measurement, usage, and application of various measuring instruments commonly found in industrial facilities.
- Interpret and use Process and Instrumentation Diagrams (P&ID’s) for various pieces of mechanical equipment, to include instrumentation, piping and other devices.
- Describe equipment maintenance with regard to planning, scheduling, selection of parts, power and hand tool requirements with a strong emphasis on environmental, accident prevention, and health issues.
- Select the proper tools, equipment and instruments to install/align a drive unit and coupling.
- Compare and contrast belt, chain and gear drives.
- Calculate various drive ratios for speed and torque.
- Classify industrial drive systems and their applications.
- Utilize manufacturer’s specifications to determine replacement parts.
- Analyze lubrication and packing seals to assure appropriate equipment performance.
- Plan, schedule and employ practical preventive maintenance for various pieces of equipment as part of an industrial system.

3 Credits 3 Weekly Lecture Hours

### IST 105 Industrial Systems Drawings Interpretation

This introductory course in blueprint reading prepares students to interpret mechanical, electrical and commercial architectural drawings and plans. Students learn about the different types of graphic representations in the electrical, mechanical and commercial construction trades, as well as how these drawings are related to the job requirements of an Industrial Systems Technician. The course will cover mechanical drawings, orthographic projections, dimensioning, use of symbols, wiring and control diagrams, piping and electrical distribution systems, and commercial construction building site plans. Emphasis will be placed on the understanding, interpretation and application of drawings.

Upon successful completion of this course, students should be able to:

- Define the purpose and use of symbols as well as the terminology associated with industrial system drawings.
- Relate the meaning of line type, dimensions, views and sections, orthographic projection, notes, etc.
- Describe mechanical details, components, and assemblies.
- Interpret electrical schematics, to include single line, full wiring, and electrical ladder diagrams.
- Decipher building wiring, conductor color coding, phase color coding and termination schemes.
- Read drawings of lighting, electrical, and piping distribution systems as well as AC control circuits.
- Create and utilize HVAC, wiring, and plumbing schematic diagrams.
- Apply schedules, site plans, and construction specifications as part of job planning requirements.
- Analyze records, reports and other documentation.
- Prepare reference documents as per in-the-field installation, repair or replacement requirements.
- Conduct material take-off and basic estimating routines utilizing drawings.

Prerequisite: ENG 050, REA 050, MAT 040

3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

### IST 200 Pumping Systems

This course provides students with basic skills and knowledge associated with the theory of industrial pumping systems, to include various pumps and system terminology, classification, specification, identification, installation, operation, troubleshooting and maintenance. Theoretical and laboratory instruction in this course provides students with a complete introduction to pumping system function, selection, sizes, dynamics and applications. Topics of coverage will emphasize flow, pressure, metering, valves, piping, single and multi-stage pumps, as well as inlet and discharge designs. A heavy emphasis will be placed on installation, routine and preventative maintenance, and troubleshooting of systems.

Upon successful completion of this course, students should be able to:

- Define and describe the function of a pump, and give an application.
- List and define various categories and types of pumps and their applications.
- Utilize appropriate terminology associated with pumps and pumping systems.
- Explain the dynamics of a pumping system.
- Interpret and explain manufacturer’s pump specifications and pump curves.
- Define pump efficiency and explain its significance to overall system operations.
- Describe the function, purpose, and applications of series and parallel pumping systems.
- Specify fluid properties relative to pump selection and operation.
- Describe the installation of a single stage pump, to
include sizing specifications and measurements.
- Describe the purpose and proper use of a flow meter.
- Calculate flow velocity and describe the relationship between pressure and head.
- Explain cavitation in a pump system, as well as corrective actions.
- Identify and configure pump motors and drives.
- Determine and select measurement instruments, tools, anchors, shims, fittings, valves, piping, and gasket materials required to install a pumping system.
- Calculate pump efficiency and make proper adjustments (as applicable).
- Describe suction, discharge, and total head and demonstrate the use of pressure and vacuum gages.
- Install a centrifugal pump using manufacturer's specifications.
- Identify, specify, and replace packing and mechanical seals.
- Start-up, inspect, maintain and troubleshoot a pump.

**Prereq.** ITA 101 or two yrs H.S. Italian

- Recall familiar facts of Italian and European civilizations
- Express briefly ideas on a given topic when guidance
- Carry out familiar requests made in Italian.
- Produce with more accuracy the phonetic sounds of the
- Respond in Italian to a representative number of daily spoken language.

**A continuation of Elementary Italian I with introduction to the mathematics courses in the college transfer curricula and for Technical Mathematics I. It involves the study of elementary algebra through quadratics.**

Upon successful completion of this course, students should be able to:
- Write in words or numerals, add, subtract, multiply, divide and round whole numbers.
- Reduce, add, subtract, multiply and divide fractions and mixed numbers.
- Write in words or numerals, add, subtract, multiply, divide and round decimals.
- Convert fractions, decimals and percents.
- Add, subtract, multiply and divide signed numbers.
- Find the missing number in proportions and linear equations.
- Solve word problems involving the competencies above.

Credits are not applicable to a degree.

**MAT 060** Introductory Algebra

This course is designed to prepare students for mathematics courses in the college transfer curricula and for Technical Mathematics I. It involves the study of elementary algebra through quadratics.

Upon successful completion of this course, students should be able to:
- Add, subtract, multiply and divide signed numbers and polynomials
- Simplify, multiply and divide rational expressions
- Simplify, multiply and divide square roots
- Solve linear equations, quadratic equations, and linear inequalities in one variable
- Graph a linear equation in two variables.
- Solve literal equations for the indicated variables.
- Factor polynomials
- Solve a system of linear equations in two variables

Prerequisite: Satisfactory grade in Basic Mathematics (MAT 040) or equivalent

**MAT 100** Intermediate Algebra

This course is designed primarily as a preparatory course for students intending to take the College Algebra and Trigonometry I and II sequence. Topics covered in this course include linear equations and inequalities; quadratic equations; introduction to functions and their graphs; 2x2 linear systems; polynomials; rational expressions and equations; and radical expressions and equations.

Upon successful completion of this course, students should be able to:
- Solve linear and absolute value equations and inequalities and formulas
- Solve problems involving functions and their graphs
- Graph linear functions and determine equations of lines
- Solve 2x2 linear systems
- Factor polynomials
- Simplify and perform basic operations on polynomials, rational expressions and radical expressions
- Solve quadratic, rational and radical equations

Prerequisite: Introductory Algebra (MAT 060) or satisfactory score on the mathematics placement test

**MAT 110** Technical Mathematics I

A basic course for the technologies. The course begins with a review of number operations, data handling, geometry and algebraic expressions. Algebraic fractions, linear equations and inequalities, linear functions, graphing and basic trigonometry are included. It is highly recommended that students in this course possess a hand-held calculator.

Upon successful completion of this course, students should be able to:
- Perform calculations on experimental data and report results to the appropriate precision.
- Factor certain polynomials and perform arithmetic operations on algebraic fractions.
- Solve linear equations and linear inequalities in one variable.
- Graph linear equations in two variables and interpret their properties.
- Solve triangles using trigonometric ratios and the laws of sines and cosines.
- Solve applied problems involving the competencies above.

Prerequisite: MAT 060

**MAT 120** Modern College Mathematics I

This course is designed to give students in the non-science fields an appreciation of and experience in using the concepts, logical reasoning and problem-solving techniques involved in various fields of mathematics. It fulfills the mathematics elective for liberal arts, administration of justice, early childhood education, fire-science technology and general education majors and may be used to fulfill the mathematics requirement for business administration majors depending upon the institution to which they transfer.

Upon successful completion of this course, students should be able to:
- Use the notation and operations of set theory.
- Use inductive and deductive reasoning as appropriate to draw a logical conclusion from given information.
- Represent numbers and add, subtract, multiply and divide in numeration systems other than base 10.
- Choose two of the following three competencies:
  - Analyze the real-number system.
  - Solve linear equations and inequalities using algebraic and graphic techniques.
  - Use ratios, proportions and percent to solve consumer-related problems.

Prerequisite: MAT 060

**MAT 111** Technical Mathematics II

A continuation of Technical Mathematics I. Topics include linear systems, radicals and complex numbers, quadratic equations and systems, advanced trigonometry to include vectors and graphing trigonometric functions, logarithms and exponentials.

Upon successful completion of this course, students should be able to:
- Solve a system on linear equations.
- Perform standard operations on radicals and complex numbers.
- Solve and graph quadratic equations and quadratic systems.
- Perform operations on vectors.
- Graph trigonometric functions.
- Evaluate and graph expressions involving logarithms or exponentials.
- Solve applied problems involving the competencies above.

Prerequisite: MAT 110

**MAT 100** Intermediate Algebra

A continuation of Elementary Italian II with introduction to reading short cultural and practical essays. Weekly laboratory practice extends the basis for understanding the spoken language.

Upon successful completion of this course, students should be able to:
- Respond in Italian to a representative number of daily situations according to dialogues illustrated.
- Produce with more accuracy the phonetic sounds of the language and include the correct rhythm, stress and linking components.
- Read aloud in Italian with due attention to principles of good pronunciation including word-stress intonation patterns.
- Produce appropriate pattern and sentence transformations.
- Write in dictation form with a reasonable degree of accuracy from materials that have been studied.
- Recall familiar facts of Italian and European civilizations from reading assignments.

**ITA 101** Elementary Italian I

Introduces the basic principles of pronunciation and grammar essentials of the Italian language. Continuing emphasis on development of listening and speaking skills.

Upon successful completion of this course, students should be able to:
- Recognize the essential differences between the Italian and English pronunciation systems.
- Understand in oral and written form first-level content words and grammatical principles.
- Read aloud in Italian with due attention to principles of good pronunciation including word-stress intonation patterns.
- Produce appropriate pattern and sentence transformations.
- Write in dictation form with a reasonable degree of accuracy from materials that have been studied.
- Recall familiar facts of Italian and European civilizations from reading assignments.

**ITA 102** Elementary Italian II

This course is offered using either an individualized technique and graphic techniques.
MAT 121  Modern College Mathematics II
This course is similar to Modern College Mathematics I in design and use as a mathematics elective. It may be taken before Modern College Mathematics I.
Upon successful completion of this course, students should be able to:
- Apply techniques and formulas to solve problems involving permutations and combinations.
- Use the definitions, axioms, and theorems of probability to solve problems.
- Use statistical measures, graphs, and normality to analyze a distribution.
- Use one of the following competencies:
  - Analyze various mathematical systems including the integers mod m using the cumulative group properties.
  - Use the concepts and theorists of elementary number theory to solve problems.
  - Solve problems involving the metric system.
  - Use the concepts and formulas of elementary geometry to solve problems.
  - Use the computer to solve problems in the competencies covered.
Prereq. MAT 060
3 Credits 3 Weekly Lecture Hours

MAT 125  Mathematics for Elementary Teachers I
This course emphasizes both the clear understanding of mathematical ideas and, especially, the ability to communicate these ideas to elementary school children. Using various mathematical models this course covers the following topics: sets, whole numbers, numeration, estimation, number theory, fractions, decimals, integers and proportions.
Upon successful completion of this course, students should be able to:
- Utilize the key mathematical processes of communicating, reasoning, solving problems and making connections.
- Demonstrate an understanding of structure, properties and operations in the whole number system.
- Utilize mental computation and estimation techniques.
- Demonstrate an understanding of basic number theory concepts and processes.
- Demonstrate an understanding of structures, properties and operations in the system of integers.
- Demonstrate an understanding of properties and operations with fractions.
- Solve problems using ratios, proportions and percents.
Prereq. MAT 060
3 Credits 3 Weekly Lecture Hours

MAT 126  Mathematics for Elementary Teachers II
As a continuation of Mathematics for Elementary Teachers I, this course emphasizes both the clear understanding of mathematical ideas and the ability to communicate these ideas to elementary school children. Topics include data analysis, probability, measurement and geometry in two and three dimensions. This course is designed primarily for students planning to major in elementary education but may be elected by other education majors.
Upon successful completion of this course, students should be able to:
- Collect, organize, analyze and interpret statistical data.
- Solve probability problems.
- Use geometric shapes and patterns to describe real-world phenomena.
- Demonstrate an understanding of the concept of measurement.
- Use triangle congruence and similarity.
- Analyze lines and circles using coordinate geometry.
- Use transformations to solve geometric problems.
Prereq. MAT 125
3 Credits 3 Weekly Lecture Hours

MAT 130  Finite Mathematics
This course is designed primarily (but not exclusively) for Business Administration students. Topics include graphing lines and linear inequalities, solving systems of linear equations, matrices, linear programming, set theory, probability, counting principles and applications from management and economics.
Upon successful completion of this course, students should be able to:
- Analyze the mathematical properties of lines in the plane.
- Perform operations on matrices.
- Solve 2 x 2 and 3 x 3 systems of linear equations.
- Find the optimal solution of a linear programming problem using the graphing method for two variables and the simplex procedure.
- Use the principles of set theory and counting to solve probability problems.
- Apply the mathematical properties of lines and matrices to break-even analyses, economic equilibrium problems, and other business and economic problems.
Prereq. MAT 060
4 Credits 4 Weekly Lecture Hours

MAT 131  Elementary Calculus
This course is designed primarily (but not exclusively) for Business Administration students. Topics include functions, limits, differentiation and integration. Applications include maxima-minima and problems in management and economics.
Upon successful completion of this course, students should be able to:
- Solve algebraic problems prerequisite to calculus.
- Take the derivatives of certain algebraic functions and products, quotients and compositions of such functions.
- Apply the concepts of differential calculus to optimization problems.
- Graph and take the derivatives of exponential and logarithmic functions.
- Integrate exponential, certain algebraic functions and some combinations of these functions using substitution.
Prereq. MAT 130 or MAT 140
4 Credits 4 Weekly Lecture Hours

MAT 135  Business Precalculus
This course is designed primarily (but not exclusively) for Business Majors. Topics include graphing and solving problems using linear, quadratic, rational, square root, log, and exponential functions, solving systems of equations, performing operations on matrices, linear programming, and applications from business and economics.
Upon successful completion of this course, students should be able to:
- Graph and solve problems using linear, quadratic, polynomial, rational, and square root functions.
- Graph and solve problems involving the log and exponential functions.
- Perform operations on matrices.
- Find the optimal solution of a linear programming problem using the graphing method of two variables.
- Apply the mathematical properties of lines, matrices and exponential and log functions to business and economic problems.
Prereq. MAT 100
3 Credits 3 Weekly Lecture Hours

MAT 136  Business Calculus
This course is designed primarily (but not exclusively) for Business majors. Topics include limits, differentiation, and integration. Applications include maxima-minima and problems in management and economics.
Upon successful completion of this course, students should be able to:
- Calculate the derivatives of certain algebraic functions, and products, quotients and compositions of such functions.
- Apply the concepts of calculus to optimization problems and consumer and producer surplus.
- Calculate the derivatives of exponential and logarithmic functions.
- Integrate exponential, certain algebraic functions, and some combinations of these functions using substitution.
Prereq. MAT 135
3 Credits 3 Weekly Lecture Hours

MAT 140  College Algebra and Trigonometry I
Topics covered in this course are from both College Algebra and Trigonometry and include polynomials, rational expressions, functions (linear, quadratic, trigonometric) and theory of equations. This course is intended primarily for those students who are majoring in science, engineering or mathematics. Together with College Algebra and Trigonometry I and College Algebra and Trigonometry II (MAT 141), it prepares students for Calculus I (MAT 160).
Upon successful completion of this course, students should be able to:
- Perform basic operations on real numbers, polynomials, rational expressions and radicals.
- Solve linear, absolute value, radical, and quadratic equations and inequalities and radical equations.
- Perform operations in the rectangular coordinate system.
- Define, evaluate, and graph functions.
- Solve problems in plane trigonometry.
Prereq. MAT 100
3 Credits 3 Weekly Lecture Hours

MAT 141  College Algebra and Trigonometry II
A course that includes topics from College Algebra and Trigonometry dealing with functions (rational, exponential, logarithmic, and circular), theory of equations and operations on complex numbers. This course is a continuation of College Algebra and Trigonometry I and primarily intended for students in science, engineering, and those preparing for Calculus I.
Upon successful completion of this course, students should be able to:
- Perform operations involving functions.
- Solve problems involving polynomials and rational functions.
- Solve verbal and non-verbal problems involving logarithmic exponential, and circular trigonometric functions.
- Simplify algebraic expressions involving complex numbers.
Prereq. MAT 140
3 Credits 3 Weekly Lecture Hours

MAT 150  Precalculus
This course is designed to prepare students for Calculus I. It includes the study of polynomial, rational, exponential, logarithmic and trigonometric functions, and the complex number system. Emphasis is placed on the graphing of functions.
Upon successful completion of this course, students should be able to:
- Perform the operations necessary to use polynomial, rational, exponential, logarithmic and trigonometric functions in the real number system.
- Use the polynomial, rational, exponential, logarithmic and trigonometric functions in the solution of equations, inequalities and applied problems.
• Coordinate the geometric properties of points and lines in the Cartesian or polar planes with polynomial, rational exponential, logarithmic and trigonometric functions.
• Use fundamental identities and formulas involving the polynomial, rational, exponential, logarithmic and trigonometric functions.
• Perform algebraic operations on complex numbers.
• Represent complex numbers graphically.

Consultation with Mathematics advisor is recommended.
Satisfactory MATH placement test score

MAT 160  Calculus I
This course is designed for students in the field of science and engineering. It includes the concept of limit, plane analytic geometry, the rate of change of a function, infinite summations, Riemann sums and applications of differentiation and integration. It is a required course for students majoring in Engineering and may be elected by students in Liberal Arts, Business Administration and Science. It serves as a prerequisite for further mathematics courses and the University Physics sequence.

Upon successful completion of this course, students should be able to:
• Use the concept of limit.
• Differentiate functions.
• Use differential calculus to sketch curves and to solve applied problems.
• Integrate functions by approximation and by use of the antiderivative.
• Use integral calculus to determine area and to solve applied problems.

PreReq. MAT 141 or MAT 150
5 Credits 5 Weekly Lecture Hours

MAT 161  Calculus II
This course is a continuation of Calculus I. It includes transcedntal functions, methods of integration, improper integrals and L'Hopital's rule, conic sections, parametric equations, polar coordinates, dot and cross products of vectors, and vector calculus in two- and three-dimensional space. It is a required course for students majoring in Engineering, and may be elected by students in Liberal Arts, Business Administration, and Natural Science. It serves as a prerequisite for further mathematics course and for University Physics II (PHY 132).

Upon successful completion of this course, students should be able to:
• Differentiate and integrate using transcendental functions.
• Integrate functions using special methods.
• Relate functional and geometric properties of conic sections, curves given in parametric form, and polar curves.
• Use vectors to solve 2-space and 3-space geometrical problems.
• Use vector-valued functions to describe motion in space.

PreReq. MAT 160
5 Credits 5 Weekly Lecture Hours

MAT 200  Linear Algebra
This course is designed primarily for engineering, computer science and math students planning to transfer to four-year institutions. The topics include systems of linear equations, matrices, determinants, vectors, vector spaces, linear transformations, eigenvalues and applications.

Upon successful completion of this course, students should be able to:
• Perform matrix operations including addition, multiplication and finding the inverse.
• Solve systems of linear equations using matrix methods.
• Find the value of determinants using the methods of cofactors.
• Solve systems of linear equations using determinants and Cramer's Rule.

PreReq. MAT 161
3 Credits 3 Weekly Lecture Hours

MAT 210  Introduction to Mathematical Statistics
This course is designed to give students a tool as well as a language in which they can better understand and convey the data they work with. It will employ elementary algebra in deriving measures of central tendency and variability for various discrete probability distributions and will include the study of the following topics: descriptive statistics, inferential statistics, frequency distributions, discrete probability distribution (Bernoulli, Binomial, Poisson geometric and hypergeometric) and derivation of their means and variances, Central Limit Theorem, applications of the normal distribution, hypothesis testing, interval and point estimation of population parameters, Chi-square test with continuity corrections, linear correlation and regression, analysis of variance, and application of statistics to various disciplines.

Upon successful completion of this course, students should be able to:
• Recognize the role of statistics in critical thinking and the applications of statistics in descriptive and inferential statistics.
• The use of statistical measures of central tendency, statistical measures of variability, statistical measures of position, graphs, stem-and-leaf displays and frequency tables to organize, describe, represent and analyze the data of a population.
• Solve probability problems using the axioms, formulas, definitions and rules associated with a probability.
• Solve probability distribution problems and expected value problems using definitions and formulas.
• Solve problems in statistical inference concerning sample means distribution, confidence intervals, minimum sample size determination, hypothesis testing of population parameters (means, variance and proportion), contingency tables (independent variables), goodness of fit test (expected distribution) and analysis of variance (equal population means).
• Solving problems involving the model simple linear regression line and the Pearson Product Moment linear correlation coefficient.

PreReq. MAT 121 or above
3 Credits 3 Weekly Lecture Hours

MAT 260  Calculus III
This course is a continuation of Calculus II. It includes partial differentiation, multiple integration, vectors and infinite series. It is a required course for students majoring in engineering and may be elected by students in liberal arts, business administration, and science. It serves as a prerequisite for further mathematics courses.

Upon successful completion of this course, students should be able to:
• Find partial derivative of functions of two or more variables.
• Use partial differentiation to solve applied problems.
• Use techniques of vector analysis.
• Test Infinite series for convergence or divergence.

PreReq. MAT 161
3 Credits 3 Weekly Lecture Hours

MAT 261  Differential Equations
This course is designed for students in the fields of science and engineering. It includes first-order differential equations, linear higher-order differential equations, applications, systems of equations, Laplace transformation, series and approximate solutions. It is a required course for students majoring in engineering and may be elected by students in Liberal Arts, Business Administration and Science.

Upon successful completion of this course, students should be able to:
• Solve first-order differential equations.
• Solve linear higher order differential equations.
• Use differential equations to solve applied problems.
• Solve systems of differential equations.
• Use Laplace transformations to solve differential equations.
• Solve differential equations by use of series.
• Find approximate solutions by use of numerical methods.

PreReq. MAT 260
3 Credits 3 Weekly Lecture Hours

MATH 105  Business Math
This course stresses practical applications of arithmetic and mathematical concepts appropriate to the various occupational programs in business.

Upon successful completion of this course, students should be able to:
• Balance a checkbook and reconcile a bank statement.
• Apply the base, rate, portion formula in solving business problems.
• Calculate trade and cash discounts on a bill or invoice.
• Re-price merchandise by markup and markdown formulas.
• Calculate gross and net payroll figures.
• Use the simple and compound interest formulas in banking decisions.
• Read and interpret a simplified balance sheet and income statement.
• Create four types of depreciation schedules.
• Calculate two methods for valuing inventory control.
• Compute local sales and property taxes for an individual.
• Use a monthly payments, annuity and sinking-fund table.
• Calculate the yield in percents on stocks and bonds.
• Calculate reimbursement amount on a fire insurance claim.
• Convert metric and U. S. measurements.
• Determine three types of “averages” (or determine mean, median and mode).

PreReq. MAT 040 or equiv.
3 Credits 3 Weekly Lecture Hours

(MCR) Microcomputers In Bus

MCR 122  Microsoft Word
This hands-on course provides instruction on how to create and edit documents in Word. Students learn to create professional-looking announcements, letters, resumes and reports and how to revise them. Students also learn to create and edit documents using Word Wizards and templates.

Upon successful completion of this course, students should be able to:
• Describe Microsoft Word.
• Create, edit and save a Word document.
• Format a document and insert graphics into a document.
• Use Microsoft Word Help.
• Use Word Wizard and templates to create documents.
• Create documents and tables.
• Use grammar check and spell check.
1 Credit
MCR 123 Microsoft Excel
This is a hands-on course in Microsoft Excel, the Microsoft Office spreadsheet package. Students learn how to organize data, complete calculations, make decisions and graph data to develop professional-looking reports.

Upon completion of this course, the student should be able to:
• Describe Microsoft Excel.
• Formatting worksheets and workbooks.
• Create a worksheet and embedded chart in Microsoft Excel.
• Use formulas in Excel.
• Format and create charts in Excel.
1 Credit

MCR 124 Microsoft Access
This is a hands-on introductory course in Microsoft Access. In this course, students learn to create a database query a database.

Upon successful completion of this course, students should be able to:
• Describe databases and database management systems.
• Create a database using Design and Database Views.
• Creating and modifying table data.
• Creating and modifying database forms.
• Query a database using the Select Query Window.
1 Credit

MCR 125 Microsoft Powerpoint
This is a hands-on course in Microsoft's presentation graphics software, PowerPoint. Students learn to produce professional-looking presentation materials for overhead transparencies and electronic presentations using a projection device attached to a personal computer. Students also learn to create paper printouts, outlines, speaker notes and audience handouts.

Upon successful completion of this course, students should be able to:
• Describe Microsoft PowerPoint.
• Use a design template and style checker to create a presentation.
• Enhancing presentations using formatting techniques.
• Use Outline View and Clip Art to create an electronic slide show.
• Import Clip Art from the Microsoft Clip Gallery live Web site.
• Work with masters to display professional and functional presentations.
1 Credit

MCR 222 Advanced Microsoft Word
This hands-on course focuses on the more advanced features of Microsoft Word. In this course, students learn to create reports with a title page and tables, to generate form letters, mailing labels and envelopes, and to create a professional newsletter.

Upon successful completion of this course, students should be able to:
• Create a document that has a title page and tables.
• Create a document that uses clip art and the Draw Table.
• Generate form letters using mail merge.
• Create a data source.
• Generate mailing labels from a data source.
• Generate envelopes from a data source.
• Create a professional newsletter.
Prep: MCR 122
1 Credit

MCR 223 Advanced Microsoft Excel
This hands-on course teaches students the advanced features of Microsoft Excel.

Upon successful completion of this course, students should be able to:
• Create templates and workbooks using Excel.
• Build a data table to analyze data in a worksheet.
• Create a worksheet database.
• Integrate a Word document through imbedding into an Excel document.
Prep: MCR 123
1 Credit

MCR 224 Advanced Microsoft Access
This hands-on course teaches students the advanced features of Microsoft Access. Topics include creating a query and using OLE fields on a form.

Upon successful completion of this course, students should be able to:
• Create a query for a report.
• Create date, memo and OLE fields on a form.
• Create and run a macro.
Prep: MCR 124
1 Credit

(MPT) Municipal Police Training

MPT 100 Introduction to Law Enforcement
This course teaches the police candidate the role of a police officer in the community. It defines police power and authority, the potential impact of its misuse on the community as well as social control. Understanding the function of the police within the context of the United States Constitution will also be addressed.

Upon successful completion of this course, students should be able to:
• Explicate the social control of police behavior.
• Describe and apply principles of police discretionary conduct.
• Analyze and describe the role of personal and professional conduct.
• Describe the place of police in our society.
• Show the relationship of police conduct to an ethical code.
• Detail the difference between civil and criminal behavior.
• Describe the role of public and community relations in police work.
• Delimit the role of law and administration of law in our society.
• Depict penology in Pennsylvania.
2 Credits 2 Weekly Lecture Hours

MPT 101 Professional Development
This course teaches appropriate skills for the maintenance of mental and physical well-being and appropriate professional standards of conduct. It provides relevant theory and instruction numerous areas such as the elements of physical fitness and its relationship to police work. Moreover, the physical and psychological benefits of physical fitness and the importance of establishing a healthy lifestyle in specific areas of physical training, nutrition and weight control will also be addressed.

Upon successful completion of this course, students should be able to:
• Identify the use of force continuum and explain its levels, constraints and cues.
• Identify circumstances where use of non-deadly force is authorized by law.
• Identify circumstances where use of deadly force is authorized by law.
Prep: MPT 102
3 Credits 3 Weekly Lecture Hours

MPT 102 Law and Procedures
This course teaches the police officer candidate to recognize and cite Pennsylvania criminal statutes, the rules of criminal procedures and applicable Constitutional provisions. Distinctions between criminal and civil law, federal, state and local statutes will be thoroughly addressed. In addition, topics of discussion will include, but will not be limited to, understanding the basic laws and rules that govern the power, authority, and jurisdiction of police officers in Pennsylvania.

Upon successful completion of this course, students should be able to:
• Analyze the U.S. and Pennsylvania Constitution provisions that provide the legal basis for the exercise of police power.
• Provide the legal basis for the exercise of police power.
• Recognize and cite provisions of Pennsylvania statutes that define criminal conduct.
• Apply rules and statutory provisions for arrest, search warrants, electronic surveillance and bail.
3 Credits 3 Weekly Lecture Hours

MPT 103 Law and Procedures II
This course is a continuation of Law and Procedures I which teaches the police officer candidate to recognize and cite Pennsylvania criminal statute, the rules of criminal procedures and applicable Constitutional provisions. Instruction in this course will be on theory and skills associated with the significant steps in the arrest, post-arrest, pretrial, trial and post-trial processes.

Upon successful completion of this course, students should be able to:
• Recognize and cite provisions of the Mental Health Act, Protection from Abuse Act, Liquor Control Act, and Crime Victims Compensation Act.
• Identify major provisions of the Controlled Substance Act pertinent to their enforcement capacity.
• Identify the major provisions of the cell phone laws.
• Recognize provisions of environmental laws, safety concerns, and jurisdictional issues.
• Identify circumstances when a search incident to arrest is authorized.
• Describe a suppression hearing. Identify ethical considerations in search and seizure.
• Identify consequences of conducting an unlawful search.
• Define the legal requirements to search a person, house, etc.
• Define a lawful frisk.
Prep: MPT 102
3 Credits 3 Weekly Lecture Hours

MPT 104 Vehicle Code
This course is designed to provide the student with relevant theory and skills in analyzing the provisions of the Pennsylvania Motor Vehicle Code and decisions of operating under the influence detection. Sources of standards for armed pedestrian behavior and the function of law enforcement within the context of the highway transportation system will be defined.
Upon successful completion of this course, students should be able to:

- Define a preliminary investigation. Identify the general unreliability of eyewitness identification and steps to make such identifications more reliable.
- Coordinate and apply methods of establishing value of stolen and recovered property.
- Demonstrate proper procedures for conducting the initial investigation of rape, sexual assault and sex crimes.
- Recognize the most common forms of drugs.
- Define proper surveillance techniques.
- Apply principles of preliminary, crime site and follow-up investigation.
- List applicable rules of evidence.
- Detail applicable procedures to protect crime sites and to preserve evidence.
- Perform principles of interview and interrogation.
- Differentiate criminal investigation from civil investigation.

**MPT 200 Human Relations**

This course introduces the basic principles by which students can improve their observation skills and perceptions of human behavior. Other topics addressed are sensitivity issues and how people react to authority. The importance of understanding cultural differences and ethnic intermediation will be addressed.

Upon successful completion of this course, students should be able to:

- List and describe basic universal aspects of the communication process.
- Identify the impact of role awareness, reference groups and motivation of human behavior.
- Apply proper procedures for conducting initial investigation of bias/hate crimes.
- Process legal requirements regarding emergency detention of a mentally ill person.
- Categorize necessary information to be presented in an oral statement.

**MPT 202 Crisis Management**

This course enhances the students ability to make judgments and understand the various elements of juvenile crime and the juvenile criminal justice system. To enable students to understand how to bring a dispute under control will be defined. This course will also teach behavioral skills necessary for the successful and positive resolution of dispute situations. The ability to identify and learn the necessary skills for conflict management will be thoroughly addressed.

Upon successful completion of this course, students should be able to:

- Describe and apply Constitutional and other legal requirements for arresting an individual or taking the individual into custody.
- Specify and demonstrate procedures required for arrest of individuals and for searches of those taken into custody.
- Delineate unique problems involved in the detention of mentally ill, emotionally unstable and physically handicapped individuals.
- Describe and apply principles for use of arrest in arrest and custody situations.
- List procedures for extricating hostages and responding to prisoner escapes.
- Identify proper safety procedures before entering a dispute.
- Identify the scope of and the authority of the Juvenile Court.
- Define juvenile delinquent, child in need of supervision and runaway.

**MPT 204 Firearms**

This course is designed to teach police officer candidates the fundamentals of proper use of firearms. The course incorporates application of the tactical and decision-making skills necessary for them to apply this critical skill in actual situations to protect themselves and the public from harm.

Upon successful completion of this course, students should be able to:

- Apply safety rules when using firearms.
- Illustrate proper procedures for use of pistols, shotguns and holsters.
- Define deadly and non-deadly force applications.
- Identify basic principles of ballistics.

**MPT 206 Report Writing/Case Preparation**

This course is designed to teach and demonstrate evaluation techniques for accurately recording an incident report. The course enables students to identify the charac-teristics essential to a good report as well as check for completeness and accuracy.

Upon successful completion of this course, students should be able to:

- Apply techniques of listening and one-on-one communication.
- Apply rules to prepare police officers as witnesses.
- Illustrate written reports and note-taking skills.
- Operate police vehicles under normal and emergency circumstances.
- Differentiate criminal investigation from civil investigation.

Upon successful completion of this course, students should be able to:

- Perform proper procedures of notification to a victims family of death or injury.
- Specify communication techniques for emergency notification.
- Perform proper procedures of notification to a victims family of death or injury.
- Specify communication techniques for emergency notification.
- Identify characteristics as essential to a good report.
- Define the purpose of the law of evidence.

**MPT 207 Emergency Response Training**

This course trains the police officer candidate to provide immediate emergency care prior to arrival of paramedical aid to the site. It provides the student with the knowledge and skills necessary to work as a first responder in an emergency to help sustain life, reduce pain, and minimize the consequences of injury or sudden illness until additional medical help arrives.
Upon successful completion of this course, students should be able to:

- Describe and apply principles of emergency medical care to crisis situations.
- List emergency medical problems confronted by police officers.
- Detail procedures for obstetrical emergencies.
- Stipulate procedures for care of AIDS patients and protection of officers.

3 Credits 2 Weekly Lecture Hours 1 Weekly Laboratory Hours

MPT 208 Handling Arrested Persons

This course introduces the police officer candidate to emergency case management of disorderly mentally ill, criminal or psychologically disturbed individuals. The course also covers officer safety and strategy in preparing and pre-planning in an arrest. In addition, it familiarizes the student with the parts and operational mechanisms and use of handcuffs and teaches safe and efficient transport of individuals placed in custody.

Upon successful completion of this course, students should be able to:

- Describe various violent and dangerous situations, more particularly those involving domestic disputes, mentally ill individuals, and violent criminals.
- Recognize and describe mental illness.
- Detail suicide and hostage-taking events.
- Analyze and apply principles of response to dangerous, potentially dangerous, or hostile crisis situations.
- Identify proper procedures to conduct field search of arrested persons.
- Detail suicide and hostage-taking events.

1 Credit 1 Weekly Lecture Hours

(MTT) Machine Tool Technology

MTT 108 Mathematics for Occupational Technologies

This course is designed to provide the student with relevant theory and skills in solving practical, industrially based mathematical problems. Topics of instruction will include, but will not be limited to, calculating arithmetic expressions involving whole numbers, fractions, decimals, ratio, proportion, and percentages. The appropriate use of English/metric conversions, exponents, square roots, basic graph interpretation, and basic algebraic expression (formulas) manipulation will be presented. In addition, the solution of geometric figures will be addressed. An introduction to the use of trigonometry for the solution of right and oblique triangles will also be included.

Upon successful completion of this course, students should be able to:

- Conduct arithmetic operations using whole numbers, fractions, and decimals for the solutions of typical technologically based concepts, processes and operations.
- Perform English and Metric computations involving numeric and literal problems.
- Demonstrate the use of a Cartesian and a polar coordinate system to interpret and construct basic graphs, such as: bar, pie, broken line, etc.
- Analyze data and select an appropriate method to construct a chart, or graph, as well as depict relationships among topical data.
- Solve fundamental expressions and common formulas using algebraic rules for addition, subtraction, multiplication, division, ratio, proportion, percentages, powers and roots, and transposition of terms, to include mixed operators.
- Apply appropriate terminology and rules for solving problems involving basic geometric entities and figures.
- Communicate the rules of similarity and congruency and solve basic triangles.
- Identify and construct right triangles and utilize the Pythagorean theorem, sine, cosine, and tangent functions and The Law of Sines/Cosines for the trigonometric solution of unknowns.

3 Credits 3 Weekly Lecture Hours 1 Weekly Laboratory Hours

MTT 110 Print Layout and Measurement for Machining

This introductory course is designed to provide instruction in the theory and skills necessary to read conventional drawings commonly used in the machining industry. Instruction will be centered around object visualization and feature definition/recognition. Basic through intermediate difficulty multiview third angle (with lesser emphasis on first angle) projection, to include orthographic, isometric, sectional and auxiliary views will be addressed. Print/part feature terminology, tolerances, limits, fits, conventional dimensioning practices, surface finish and inspection issues will be stressed. Sketching, precision layout tools, measurement tools, and techniques of usage will be covered and utilized to demonstrate comprehension in print/part interpretation.

Upon successful completion of this course, students should be able to:

- Discuss the purpose, the importance, the types, and various uses of engineering drawings, as they relate to the design and manufacture of parts.
- Communicate the purpose of a title sheet, and relate the value of each of its components to the process of completing a finished product.
- Analyze the features of an object and develop representative sketch using the principles of orthographic projection.
- Interpret line work, dimensions, orthographic views, various section types, auxiliary views, and annotations associated with mechanical drawings.
- Visualize objects, describe geometric relationships, determine feature size and placement, and apply terminology in the interpretation of graphical representations of a tab, bevel, chamfer, neck, fillet, round, slot, keyway, flat, boss, pad, hole/pattern, countersink, counterbore, tapered surface, as well as English and metric thread forms.
- Describe, discuss and apply the techniques used in standard coordinate dimensioning methods to complete sketches, to layout parts, and perform inspection operations.
- Identify, and discuss the purpose, and the limitations, of various layout tools; and, of common precision measuring instruments.
- Demonstrate the use of various layout and precision measurement tools.

Coreq. MTT 108 or higher level and MTT 110

3 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

MTT 112 Lathe Operations I

This course provides instruction in the terminology, design, setup, operation, and daily care of conventional metal working engine and related lathes. Theory and practical skill development exercises will focus on cutting tool preparations for completing external surface machining such as: straight turning, threading, drilling and tailstock operations. Accident prevention practices and procedures will be stressed throughout the course.

Upon successful completion of this course, students should be able to:

- Lubricate, clean, and perform commonly assigned operator maintenance duties for a lathe.
- Interpret work-related documents for piece-part machining on a lathe.
- Utilize appropriate terminology and accident prevention practices and procedures while referring to, and using lathes, and related accessories.
- Research design criteria and sharpen lathe tools and twist drills via off-hand grinding.
- Utilize detail drawings, calculations, layout tools,
MILLING Operations

- Identify, select, mount, set-up and adjust appropriate machine tool accessories, attachments, work holding and tool holding devices, cutting tools and workpieces in preparation for performing lathe operations.
- Calculate and set speeds and feeds in order to perform lathe operations such as facing, chamfering, center Drilling, Drilling, reaming, turning, necking, grooving, parting, knurling, external threading as well as hand tapping, filing, polishing, and de-burring.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

MILLING Operations II

- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

MILLING Operations III

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts for manufacture on a lathe and verify part dimensions during inspection procedures.
- Identify and select, mount, set-up and adjust appropriate machine tool accessories, attachments, work holding and tool holding devices, cutting tools and workpieces in preparation for performing lathe operations.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 212
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

MILLING Operations IV

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

MILLING Operations V

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

MILLING Operations VI

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations VII

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations VIII

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations IX

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations X

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations XI

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations XII

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations XIII

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations XIV

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations XV

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112

MILLING Operations XVI

- Utilize detail drawings, calculations, layout tools, precision-measuring instruments and appropriate techniques to prepare parts, and to verify part dimensions during inspection procedures.
- Identify required work and tool holding devices, select, mount, set-up and adjust appropriate accessories, attachments, and workpieces in preparation for performing milling operations such as facing, step, and slot milling, chamfering, spot drilling, drilling, reaming, spot finishing as well as hand tapping.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform machine operations.

Coreq. MTT 111
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

Prerequisite:
- MTT 112
MTT 214 Milling Operations II
This course is designed to provide theory and skill instruction supplemental to that introduced in Milling Operations I (MTT 124). Skill embellishment and expanded surface feature creation in the use of conventional metal working milling machines and attachments, along with associated accident prevention practices and procedures will be stressed. Concepts and mathematical calculations for machining of prismatic (cube-like) features and part geometry will be emphasized. Process planning, documentation and Tolerancing (GD&T) characteristics for milling work will be addressed. Cutters and inserts (geometry and grade) selection, as well as cutting parameters, will be stressed.

Upon successful completion of this course, students should be able to:

- Utilize detail drawings, layout, and inspection tools to produce work via horizontal and vertical milling operations.
- Plan sequential operations and develop a process, a tooling, and an operation sheet, for advanced piece-part manufacturing on milling machines.
- Develop set-up and inspection procedures for milled parts.
- Compare milling machine cutting tool material types, and their selection criteria.
- Research machinability factors and ratings for various types and classifications of materials.
- Refer to manufacturer’s manuals and apply theory of cutting tools to determine the application, and the identification of cutting tool adapters, cutters, and inserts.
- Determine coolant selection, speed, and feed settings in regard to tool material and insert geometry requirements in order to obtain specific surface finish requirements on milled parts.
- Interpret print requirements (including GD&T) and part geometry for machining and inspection of advanced milling parts.
- Create internal features like chamfers, bores, recesses, counterbores, countersinks, grooves and pockets using a milling machine.
- Set-up and use various style cutters to create form (profile) geometry such as angle, convex, concave, radius, T-slot, and key-way features.
- Mount and use milling machine accessories and attachments such as a right angle plate, rotary table, dividing head, boring head, angular vise, angle plate, V-blocks, sine bar/plane/vice.
- Position fixtures properly by cutting, slitting, straddle, and gang milling operations.
- Prepare piece-part modeling documentation, to include dimensioning; and, hard copy output.
- Create tool paths for drilling, boring, and reaming on CNC mills and 2-axis lathes.
- Develop, verify, and edit tool path, and CNC code, for single surface profile creation; as well as pocketing, island, and thin-wall surface and feature creation.
- Generate roughing and finishing tool path for drilling, turning, grooving, facing, and threading (to include multiple lead) operations (inside and outside) on cylindrical parts.

Prereq. MTT 129 Corq. MTT 210
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

MTT 220 CNC Programming
This course is designed to provide the experienced Computer Numerically Controlled (CNC) machine tool operator with instruction in manual part programming and advanced operations. Mathematical applications for definition of location, set-up, positioning and tool movement (absolute/incremental) within specific coordinate systems will be presented. Various aspects of intermediate to Advanced G and M code programming to include fixture offsets, thread milling, looping, macro, and sub program development/execution will be included. Criteria relevant to accident prevention practices and procedures, process planning, work-holding, tooling, machine set-up and operation, program proof-out, and quality control will also be addressed.

Upon successful completion of this course, students should be able to:

- Via manual methods, interpret and convert basic piece-part drawings in order to produce proceduralized manufacturing process, operation, workholding, tooling documentation sheets, and job plans for a CNC mill (router on similar machine tool) and a CNC lathe.
- Apply principles of mathematics, engineering print interpretation and geometric analysis to describe part datum’s, surfaces, and feature locations in terms of 2 and 2 1/2, axis machine/tool positioning.
- Prepare and proof a written manuscript for the production of parts on a CNC mill, (or similar machine), and a CNC lathe.
- Utilize mathematical calculations, and concepts of geometric relationships combined with techniques, hardware, software menus and computer system practices associated with a Computer Aided Machining/Distributed Numerical Control (CAM/DNC) system to manually write, save, retrieve and transfer CNC machine tool programs.
- Apply programming techniques (to include advanced canned cycle, loops, and macros).
- Develop programs involving advanced operations such as helical interpolation and threading milling operations.
- Program multiple and varied parts involving multiple operations per set-up to include the use of indexing devices.
- Describe the purpose and use of charting as it applies to Statistical Process Quality Control (SPQC) in the CNC machining environment.
- Discuss the principles and applications of parametric programming as they apply "group technology" part programming.

Prereq. MTT 210
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

MTT 219 CAM Solids I
As a continuation of the principles of Computer Aided Manufacturing (CAM) design database development and usage, this course is designed to build on the course entitled Solids (C)AM Modeling (MTT 129). As such, instruction in this course will be centered around the theory and skills associated with the generation of 2 through 2 1/2 axis Computerized Numerically Controlled (CNC) machine tool code generation. Specific tool assignment and tool path generation for CNC milling and profiling (router, water-jet, laser and like machines) as well as conventional, two axis, CNC lathes will be addressed.

Upon successful completion of this course, students should be able to:

- Conduct import and export, as well as other data file management and Distributed Networked Computer (DNC) operations.
- Analyze geometry in order to develop tool path routines utilizing appropriate lead in/out and roughing moves to create desired features and surface quality.
- Design and create libraries of commonly used machining operations, as well as modify operations to optimize tool paths for the improvement of part production efficiency.
- Analyze 3D parts geometry in order to conceptualize and create tool paths for prismatic (cube-like) part contours and blended multi-surface generation via 3-axis milling.
- Select an appropriate Computerized Numerically Controlled (CNC) machine tool for required piece-part production.
- Structure a plan for approaching multi-part, same set-up, tool path generation for difficult to machine piece-parts.
- Formulate a strategy, and generate axis positioning, as well as tool path code for 4th and 5th axis programming.
- Generate tool paths for creating cross drilling, face contouring, and c-axis contours on mill-turn machine tool.
- Customize a generic CNC machine tool post processor to produce desired machine/tool/program operation.
- Robots software programming capabilities to consumer products and life style improvements.

Prereq. MTT 219 Corq. MTT 220
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

MTT 230 Electrical Discharge Machining
This course is designed to provide the student with the information and basic skills required to program and operate both ram (Sinker), and 4-axis wire (EDM) Electrical Discharge Machining machines. Instruction will address the fundamental principles of the EDM process, terms, capabilities, and machine tool system components. Aspects of programming and machining methodology, to include; work holding, tooling, electrode selection and operational characteristics, process variables, set-up and operation of ram and wire machines will be addressed.

Upon successful completion of this course, students should be able to:

- Cite in writing, the principles of operation for the EDM process.
- Identify the function and the components, and operational characteristics, as well as the operation parameters, of typical ram and wire EDM machine tools.
- Compare and contrast requirements for ram and wire EDM machine maintenance, set-up and operation.
- Summarize the various types of electrode materials and designs, as well as their application.
- Explain the design and operational characteristics a ram type electrode must exhibit in order to perform appropriately.
- Interpret work order requirements and set-up a typical ram, and a wire EDM machine tool for production.
- Set-up and operate a ram and a wire EDM machine tool in order to achieve desired inspection/quality characteristics on a finished part.
- Analyze part geometry requirements and create Computer Numerically Controlled (CNC) piece-part programs, incorporating control of various processes and machining parameters for machining on a ram; and, a 4-axis wire EDM machine.
- Utilize CAM software programming options to modify cutting parameters and settings, part geometry at various points on a contour.
- Conduct service and maintenance functions typically assigned to an EDM machine tool operator.

Prereq. MTT 220 Corq. MTT 229
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours
MUS 101  Fundamentals of Music Special Studies
This course is designed for the beginning musician, non-music readers and individuals lacking a fundamental understanding of rhythm, notation, clefs, time signatures, key signatures and practical musicianship skills necessary for the study of both instrumental performance and the study of music theory and composition.
Upon successful completion of this course, students should be able to:
- Identify and read pitch in G and F clefs.
- Discriminate among various rhythmic patterns and notations.
- Perform ear training and rhythmic exercises.
- Demonstrate basic sight singing skills.
- Identify all intervals from seconds to octaves by ear (Major, Minor, Perfect and Tritone).
Prerequisite: None
3 credits  3 Weekly Lecture Hours

MUS 110  Music for Children
Music for Children offers all students an opportunity to explore and experiment with music rudiments, psychology, philosophy, performance and pedagogy. This is a course for students who wish to share their own music experiences with others.
Upon successful completion of this course, students should be able to:
- Recognize the role music plays in our culture and in the child’s educational development.
- Identify and relate educational significance to various music activities.
- Apply music rudiments to facilitate educational music activities.
- Play an autograph accompaniment while singing.
- Select appropriate materials and models of instruction to support educational plans and objectives.
- Coordinate several of the above competencies in a single instructional presentation.
3 Credits  3 Weekly Lecture Hours

MUS 115  Introduction to World Music Special Studies
As a selective survey of music, this course is designed to teach students about both traditional and contemporary music from various parts of the world, including Africa, Latin America, the Caribbean, the Middle East, central Asia, and the Far East.
Upon successful completion of this course, students should be able to:
- Listen with more focus and skill to various styles of non-western music
- Define the characteristics that are unique to each type of music, including instrumentation
- Appreciate the diversity of musical expression in world cultures and how music is experienced within individual cultures
- Understand music making and music appreciation as part of the human experience
3 Credits  3 Weekly Lecture Hours

MUS 120  Introduction to Music
This course is for humanities electives credits. Emphasis is placed on listening, music techniques and design, historic and geographic relationships, and noted personalities.
Upon successful completion of this course, students should be able to:
- Characterize general style and techniques expressed through the various stages and periods from 600 A.D. to the present.
- Relate music phases to the attributing aspects of other periods and to the cultural-social attitude and practice of each particular era.
- Identify the evolutionary influence of the format and latter 20th-century music styles and techniques found in the American and European cultures.
Prereq. ENG 050 and REA 050
3 Credits  3 Weekly Lecture Hours

MUS 121  American Music
A survey of the evolution of music in the United States from the period of colonization to the present. Themes include European classical influences on the cultural melting pot, and the genre, form and style of concert, folk, pop, jazz and commercial music.
Upon successful completion of this course, students should be able to:
- Identify the evolutionary phases of American music as influenced by other cultures and as developed from the 17th century to the present.
- Relate the various techniques and styles of American music to the multifaceted characteristics of the social, religious, political, scientific and cultural aspirations of a particular time and a specific American population.
- Discriminate among five main evolutionary stages, and identify contributors of each stage.
- Recognize the difference among genre, form and style and use each music characteristic in identifying 10 major composers.
- Interrelate all past considerations in the evolution and forecasting of current trends of American music and their relationships to the contemporary cultural/social environment.
Prereq. ENG 050 and REA 050
3 Credits  3 Weekly Lecture Hours

MUS 122  Reading and Writing Music
This course is designed for the non-music reader and individuals lacking a comprehensive understanding of rhythm, notation, clefs, time signatures and key signatures.
Upon successful completion of this course, students should be able to:
- Identify and write in G and F clefs.
- Discriminate among various rhythmic patterns and notations.
- Develop melodic patterns.
- Analyze major and minor modes.
- Synthesize and analyze basic triad structures.
- Perform in music dictation and ear training.
Prereq. Passing Math Test Score
3 Credits  3 Weekly Lecture Hours

MUS 123  Jazz: From Blues to ...
A survey course with emphasis on the various phases and styles of American jazz. Discussions and listenings will include cultural, socio-economic relationships and the evolution of technique and instrumentation.
Upon successful completion of this course, students should be able to:
- Discriminate among seven specific styles of jazz.
- Identify the technical variations of jazz artists and styles.
- Describe the contributions of at least 10 noted jazz performers.
- Recognize the influences upon and of jazz.
- Compare the evolution and role of jazz to other styles of music, both American and worldwide.
- Recognize the styles and techniques as they may relate to the cultural aspirations of a people and to the American culture as a whole.
Prereq. ENG 050 and REA 050
3 Credits  3 Weekly Lecture Hours

MUS 125  Piano Class I
Piano Class I is an introductory course in piano-playing techniques. The course is applied and provides facilities for class participation and out-of-class practice. Scales, music reading and the playing of simple folk songs and piano works will be included.
Upon successful completion of this course, students should be able to:
- Identify all keys on the piano and all symbols applicable to basic piano music.
- Control various hand positions with left- and right-hand independence.
- Perform simple rhythmic designs using upper- and lower-arm coordination and independent finger dexterity.
- Demonstrate major and minor scales with appropriate fingering, both hands and parallel motion.
- Apply basic harmony as an accompaniment to simple melodies.
- Play solo songs and simple piano works.
- Sight read simple polyphonic, two-hand piano music.
- Perform in an in-class recital.
Prereq. MUS 125 or equiv.
3 Credits  3 Weekly Lecture Hours

MUS 126  Piano Class II
A continuation of Piano Class I. Emphasis is placed on solo and duo playing with appropriately advanced materials and techniques.
Upon successful completion of this course, students should be able to:
- Apply advanced independent control of both hands including alberti bass, broken chords and arpeggiated chords.
- Control a wider range of keyboard use with rapid changes of hand positions.
- Play music with chromatic modifications.
- Perform complex rhythmic patterns with symmetric and asymmetric accents.
- Sight read music applicable to individual skills.
- Play solo and duo piano works, including some standard repertoire of Bach, Mozart and others.
- Perform in an in-class recital.
Prereq. MUS 125 or equiv.
3 Credits  3 Weekly Lecture Hours

MUS 127  Survey of American Musical
In this humanities elective, students study the evolution of musical theater through opera, oratorio, minstrel shows and foollies to the present. Emphasis is on the interrelationship of both theater and music techniques and styles.
Upon successful completion of this course, students should be able to:
- Discriminate among several specific phases of musical drama.
- Identify the differences between opera and American musicals.
- Describe the contributions of at least 10 noted composers and 10 librettists.
- Compare the evolutionary stages and roles of the various phases of musical drama with the culture, society, economics and politics of each period.
- Acknowledge the contributions of noted performers of American musical theater.
- Interrelate all past considerations in the evolution of the musical as they may relate to current and future trends in the genre.
Prereq. ENG 050 and REA 050
3 Credits  3 Weekly Lecture Hours

MUS 129  Music of the World
A survey of the music of the world’s major cultures and how music is experienced within these cultures and how music is experienced within individual cultures.
Upon successful completion of this course, students should be able to:
- Identify music from various parts of the world, including Africa, Latin America, the Caribbean, the Middle East, central Asia, and the Far East.
- Discriminate among various rhythmic patterns and notations.
- Develop melodic patterns.
- Analyze major and minor modes.
- Synthesize and analyze basic triad structures.
- Perform in music dictation and ear training.
Prereq. Passing Math Test Score
3 Credits  3 Weekly Lecture Hours
MUS 128      Guitar I Special Studies
This course teaches the basic skills of guitar playing, including music theory, technique exercise, chord forms and rhythms. Level 1 reading etudes and songs will be assigned for classroom performance. This class is intended for students with little or no previous guitar background.
Upon successful completion of this course, students should be able to:
• Apply fundamentals of guitar technique to the electric or acoustic guitar
• Read music appropriate for the guitar
• Perform technical exercises for left and right hand development
• Apply the concepts of music notation and theory, including chromatic scale, triad and seventh chord formulas, major scale formulas, and triad and seventh chord spellings
• Chart the parameters of musical form as applied to songs
• Play rhythmic accompaniments of traditional and popular songs in diverse styles

3 Credits 3 Weekly Lecture Hours

MUS 129      Guitar II Special Studies
This course is a continuation of Guitar I and includes Guitar Level 2 reading, theory and performance. Students will perform scales, chords, etudes, chord accompaniments, and other assigned repertoire.
Upon successful completion of this course, students should be able to:
• Demonstrate Level 2 techniques on an electric or acoustic guitar
• Play scales (major, pentatonic, blues) and chords (3 & 4 part)
• Read appropriate Level 2 etude and repertory materials
• Apply technical exercises for left and right hand development
• Note chord spellings
• Analyze forms of selected song repertoire
• Perform Level 2 exercises, etudes, and repertoire

3 Credits 3 Weekly Lecture Hours

(NET) Network Engineering

NET 110      Network Technologies
This course prepares students to have an overall view of the way computers communicate and the basics of networking. Key topics include networking standards, the OSI model, network protocols, transmission media, topologies, hardware, software, WANs and remote connectivity, security, managing and upgrading a network, and TCP/IP.
Upon successful completion of this course, the student should be able to:
• Describe the various network services and standards.
• Explain the industry standard OSI model of network computing
• Describe and establish network security and various management issues.
• Describe connectivity and transmission media.
• Define the topologies and how they work with each other.
• Perform basic TCP/IP computations.
• Describe network protocols and how the work together.

Prereq. ENG 050, REA 050, MAT 040
3 Credits 3 Weekly Lecture Hours

NET 115      Windows XP Professional
In this course students will learn how to set up and support Windows XP operating system. Students will gain experience in installing, administering, and troubleshooting this desktop environment.
Upon successful completion of this course, the student should be able to:
• Install, configure, manage monitor, and troubleshoot DHCP in a MS Windows Server 2003 network infrastructure.
• Install, configure, manage, monitor, and troubleshoot Remote Access in a MS Windows Server 2003 network infrastructure.
• Install, configure, manage, monitor, and troubleshoot Network Protocols in a MS Windows Server 2003 network infrastructure.
• Install, configure, manage, monitor, and troubleshoot WINS in a MS Windows Server 2003 network infrastructure.
• Install, configure, manage, monitor, and troubleshoot Network Address Translation.
• Install, configure, manage, monitor, and troubleshoot Certificate Services.

Prereq. NET 110
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

NET 116      Microsoft Windows 2003 Server
In this course students will learn how to set up and support the Windows Server 2003 operating system. Students will gain experience in installing, administering, and troubleshooting this enterprise level server operating system. Upon successful completion of this course, students should be able to:
• Install Windows Server 2003 using various deployment methods.
• Manage and maintain the Windows Server 2003 environment.
• Administer server hardware and disks.
• Perform user, computer, and group account administration.
• Manage and maintain access to resources.
• Implement disaster recovery.

Prereq. NET 115
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

NET 117      Windows 2003 Directory Services Implementation and Administration
Students will learn to install, configure, and troubleshoot MS 2003 Active Directory components, DNS for Active Directory, and Active Directory security solutions. Students will also learn how to manage, monitor, and optimize the desktop environment using Group Policy.
Upon successful completion of this course, the student should be able to:
• Install, configure, and troubleshoot MS Active Directory.
• Install, configure, manage, monitor, and troubleshoot DNS for Active Directory.
• Install, configure, manage, monitor, optimize, and troubleshoot change and configuration management.
• Manage, monitor, and optimize components of Active Directory.
• Configure, manage, monitor, and troubleshoot Active Directory Security.

Prereq. NET 116
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

NET 120      Windows 2003 Infrastructure Implementation and Administration
This course teaches students how to install, manage, monitor, and troubleshoot DNS, DHCP, Remote Access, Network Protocols, IP Routing, and WINS in a MS Windows 2003 network infrastructure. Students will also learn how to manage, monitor, and troubleshoot Network Address Translation and Certificate Services.
Upon successful completion of this course, the student should be able to:
• Install, configure, manage, monitor, and troubleshoot DNS in a MS Windows Server 2003 network infrastructure.

NET 231      Advanced Novelle Network Administration (6x)
This course enhances the student’s network management and monitoring skills through demonstrations, discussions, and hands-on activities in NetWare 6.x. The course concentrates on installation and upgrades, migration of servers, server and client management, eDirectory, IP and Internet Infrastructure, optimization of server components, security and troubleshooting fundamentals.
Upon successful completion of this course, the student should be able to:

- Install and troubleshoot a server installation.
- Identify and explain the components of a Upgrade and/or Migration.
- Modify server components for server management and optimization.
- Configure and troubleshoot client management.
- Design an eDirectory structure.
- Define and manage IP and Internet services.
- Explain database repair procedures using various NetWare tools.

**NUS 232  Novel Network Design & Implementation**

This course provides students the necessary skills to design and create a NetWare 6.x implementation plan. Students will consider design strategies and implementations and complete a NetWare installation. Students will also learn Novell server tools. The class will focus on Novell's eDirectory including preparation, tree design, troubleshooting and accessibility.

Upon successful completion of this course, the student should be able to:

- Perform a Netware 6.x server install.
- Develop a migration plan based on tools provided with NetWare 6.x.
- Define advanced Novell Storage Management and implementation.
- Describe ifadder configuration management.
- Develop a Novell Cluster Services solution.
- Describe and manage Novell troubleshooting tools.
- Describe and implement Novell eDirectory preparation, tree design, troubleshooting and accessibility.

**NET 241  Network Protocols TCP/IP**

This course gives the students the skills necessary to procure an Internet address, configure a Subnet mask, assign IP addresses and troubleshoot common IP address problems. The course also gives students the skills necessary to use common TCP/IP applications including Telnet and FTP.

Upon successful completion of this course, the student should be able to:

- Explain the differences between the DoD Protocol model and the OSI model.
- Discuss data multiplexing, switching, bridging and routing technologies.
- Explain IP addressing using dotted decimal notation and assign IP addresses.
- Identify and troubleshoot datagram delivery, routing tables, Exterior Gateway Protocol (EGP) and Internet Control Message Protocol (ICMP).
- Discuss data stream maintenance, windowing, and host and network file setups.
- Identify and troubleshoot Domain Name Services (DNS), File Transfer Protocol (FTP), Trivial File Transfer Protocol (TFTP), Telnet, Simple Network Management Protocol (SNMP), and Simple Mail Transfer Protocol (SMTP).
- Configure hosts, networks, gateways, protocols and services.
- Discuss BOOTP, DHCP, SLIP and PPP.
- Discuss planning technologies for router configuration, IP tunneling, DHCP servers and SNMP.

**NUS 102  Nursing Mathematics: Dosage Calculation and Drug Preparation**

Nursing Mathematics covers adult drug preparation, dosage calculation, and intravenous fluids and medications administration. Measurement requirements, system conversions, oral and parenteral dosage calculations, and intravenous fluid flow rates are covered in detail. Nursing implications for drug administration are emphasized in every unit including a brief overview of drug label interpretation and preoperative and pediatric dosage considerations.

Upon successful completion of this course, students should be able to:

- Calculate mathematical problems working with fractions, decimals, and percents.
- Solve drug dosage problems using ratio and proportion.
- Use system conversions (metric and household) for volume and weight problems.
- Calculate oral and parenteral dosage problems in the same system and in different systems.
- Measure drugs administered in units.
- Identify pediatric and geriatric considerations for drug administration.
- Calculate intravenous fluid flow rates (drops per minute and milliliters per hour) and infusion times.
- Identify abbreviations and symbols for drug preparation and administration.
- Accurately read and interpret a drug label in relation to a medication order.

**NUS 110  Fundamentals of Nursing**

The nursing process is presented as the method utilized by the nurse in health maintenance of individuals across their life span and that of their families. Knowledge and skills essential to nursing practice in meeting individual’s basic needs are emphasized. Clinical laboratory experiences incorporate the use of advanced technologies in order to provide competent care to patients with common health maintenance needs.

Upon successful completion of this course, students should be able to:

- Identify fundamental concepts of nursing practice used to administer therapeutic nursing interventions to patients of varied cultures across the life span.
- Identify how individuals respond to need interferences to achieve and maintain an optimum level of wellness on the health-illness continuum.
- Identify how an individual’s basic needs serve as a motivator and drive the nursing process.
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- Identify how individuals respond to need interferences to achieve and maintain an optimum level of wellness on the health-illness continuum.
- Identify how an individual’s basic needs serve as a motivator and drive the nursing process.

- Discuss principles of asepsis used in providing patient care.
- Demonstrate knowledge necessary to implement the standards of perioperative nursing practice of the AORN as the conceptual basis of specialty practice in the OR.

The knowledge and techniques necessary to assume responsibilities of the perioperative nurse are emphasized in this broad-based yet comprehensive orientation to the operating room and the perioperative role. Standards of patient care in the operating room are explored and identified. Assessment of patient needs and implementation of nursing interventions are emphasized. Collaborative decision making is reviewed relative to total intraoperative care. Subject material guides the learner to provide for and contribute to patient safety through control of internal and external environment, biological testing and product evaluation, as well as to assist the patient with the management of anxiety through the principles of biological, physical and social sciences. The College recognizes the standards of professional nursing practice of the AORN as the conceptual basis of specialty practice in the OR.

Upon successful completion of this course, students should be able to:

- Describe the psychosocial influences affecting the patient’s response to surgical intervention.
- Demonstrate knowledge necessary to implement the perioperative role.
- Discuss principles of asepsis used in providing patient care during the intraoperative period.
- Analyze the conceptual basis of role function as an interdisciplinary team member in delivery of care to the operative patient.
- Plan nursing activities that reflect the nursing process in providing care to the patient undergoing surgical intervention.
- Relate nursing, legal and ethical boundaries in the practice of professional nursing in the operating room.

**NUS 205  Perioperative Preceptorship**

The skills needed by the nurse to practice professional nursing in the operating room are emphasized. Under the tutelage of an operating-room nurse preceptor, with the guidance of the College faculty facilitator, the learner is introduced to the activities performed by the nurse in the operating room throughout the patient's surgical experience. Learners will function within the scope and multiple dimensions of the perioperative role as defined in the preceptor institution.

Working with guidelines developed by the College in collaboration with a local AORN advisory board, the preceptorship is a 15-day clinical practicum. Preceptors are selected by the OR nurse manager in the preceptor hospital. Preceptorship sites may be arranged by the College’s preceptor director. Preceptors may be selected from the College’s preceptor affiliate sites. Schedules for clinical activities are mutually arranged by students and preceptor.
Upon successful completion of this course, students should be able to:

- Assess the pathophysiologic and psychosocial influences affecting the patient’s response to surgical intervention.
- Demonstrate the knowledge and skills needed to implement the perioperative role.
- Apply principles of asepsis in providing patient care during the intraoperative period.
- Function as a member of the interdisciplinary team in providing patient care during the intraoperative period.
- Demonstrate application of the nursing process in providing nursing care to the patient receiving surgical intervention.

NUS 207 RN First Assistant

The knowledge and technique necessary to assuming responsibilities of the RN First Assistant are emphasized. The role diversity of the first assistant is explored in its interdependent relationship, as the nurse works both with the physician and for the benefit of the patient. The nursing diagnosis is used as the defining guide in planning and implementing patient care. Expanded functions are stressed and elaborated as the nurse is prepared to assume responsibility in scrubbing, draping, retracting, exposing, damping, ligating and suturing. Intellectual and manual dexterity are combined to prepare the nurse with the essential skills necessary to this expanded professional role. The College recognizes AORN's position statement on the role of the RN First Assistant. The program meets AORN Education Standards and is accepted by the Competency and Credentialing Institute for Perioperative Nursing.

Upon successful completion of this course, students should be able to:

- Trace the historical role of the nurse in the operating room.
- Apply principles of asepsis, infection control, physical assessment and the nursing process.
- Review surgical anatomy, physiology and operative techniques related to first assisting.
- Recognize surgical hazards and initiate appropriate corrective and preventive action.
- Validate intraoperative nursing behaviors of handling tissue, providing exposure, using surgical instruments, suturing and providing hemostasis.

Prerequisites: 2 yrs Perioperative Experience

NUS 208 RN First Assistant Internship

The RN First Assistant Directed Internship offers clinical preparation for perioperative nurses in first assisting. This internship is based on certain assumptions about the rights of patients and needs of the learner. The College attaches significance to the patient’s right to have a qualified assistant during surgical intervention. The perioperative nurse who is prepared as a first assistant is capable of acting collaboratively in assisting both surgeon and patient. The College also believes that the perioperative nurse entering this internship will be a highly motivated individual and bring to the internship personal and professional experience of high quality. Flexibility and respect for individual student goals are essential in planning the internship. Therefore, each student has an active part in determining objectives, identifying learning resources and evaluating attainment of goals. Students work with a College faculty facilitator and surgical preceptor during the internship. The College recognizes AORN’s position statement on the role of the RN First Assistant. The program meets AORN Education Standards and is accepted by the Certification Board for Perioperative Nursing.

Upon successful completion of this course, students should be able to:

- Demonstrate application of principles of asepsis and infection control, physical assessment and nursing process.
- Recognize surgical anatomy and physiology and operative technique related to first assisting.
- Demonstrate skill in recognizing surgical hazards and initiate appropriate corrective and preventive action.
- Carry out intraoperative nursing behaviors of handling tissue, providing exposure, using surgical instruments, suturing and providing hemostasis.

The following must be submitted prior to registering for the Internship:

- A letter from the department manager validating the nurse’s experience (in years), proficiency in scrub and circulator roles, ability to perform in stressful and emergency situations, and ability to perform effectively and harmoniously as a team member.
- A copy of the display portion of the professional license to practice nursing in the state in which the internship is to be done.
- Evidence of current professional malpractice insurance (policy and cancelled check)
- Completed health examination (form supplied by the College)
- Evidence of current health insurance policy
- Evidence of current CPR certification (ACLS)
- Copy of certification card (CNOR)

Prerequisites: NUS 207

NUS 210 Nursing Concepts and Practice II

NUS 210 builds on the knowledge and skills gained in previous college courses and in NUS 110 and 111 specifically. The nursing processes of assessment, diagnosis, planning, implementation and evaluation are identified and explained for a selection of patients across the lifespan who have complex psychological and physiological need interferences. In concurrent clinical practice, students will demonstrate knowledge and skills, integrating pharmacology, nutrition, communication principles, and utilizing advanced technologies.

Upon successful completion of this course, students should be able to:

- Use the nursing process in the care of patients with complex need interferences with safety and security.
- Use the nursing process in the care of patients with complex need interferences in fluid and electrolyte balance.
- Use the nursing process in the care of patients with complex need interferences in oxygenation.
- Use the nursing process in the care of patients with complex need interferences in the utilization of nutrients.
- Use the nursing process in the care of patients with complex need interferences in regulatory function.
- Demonstrate critical thinking skills when caring for patients with complex health problems utilizing advanced technologies in a variety of structured health care settings.

Prerequisites: NUS 210 Coreq. PSY 220

NUS 211 Nursing Concepts and Practice III

NUS 211 provides the student with the opportunity to integrate previously acquired knowledge with new concepts and technologies relating to patients with complex multi-system needs. Ethical and legal aspects, and principles of management are explored. The use of case studies provides the student the opportunity to explore nursing management of selected patient situations. Application of theory is in acute, long-term care and community settings. The student will gain an appreciation for the scope of nursing practice by integrating the roles of provider and manager of care.

Upon successful completion of this course, students should be able to:

- Use leadership skills to manage nursing care for a group of patients.
- Analyze pertinent ethical and legal issues in the practice of nursing.
- Integrate previously learned knowledge when providing care to the older adult.
- Integrate previously learned knowledge when providing care to patients with complex need interferences in sensory-motor functions.
- Evaluate the outcome of the nursing process when caring for patients with complex multi-system needs utilizing advanced technologies.

Prerequisites: NUS 210, ENG 100, PSY 140, NUS 102

NUS 220 Clinical Enhancement Skills

This course is structured to provide the student and other health care provider with the enhanced clinical skills, knowledge, psychomotor expertise, and basic principles to perform and record electrocardiography, arrhythmia interpretation, and phlebotomy. The identification of normal and abnormal EKGs including the review of the anatomy and physiology of the electrical conduction system of the heart will be covered. Legal issues will be discussed along with appropriate documentation, IV medications and alternative IV infusion systems. By the end of the course, the student will have the ability to integrate theory and practice to safely and with confidence identify normal and abnormal cardiac rhythms, successfully perform phlebotomy, maintain, and trouble shoot IV infusions, and perform and record electrocardiographs.
Upon successful completion of the course, the student should be able to:

- Demonstrate the four examination techniques of inspection, palpation, percussion, and auscultation.
- Use the appropriate communications skills necessary for conducting and documenting patient education.
- Identify the normal components of the EKG.
- Demonstrate that an electrical impulse follows through the normal conduction pathway of the heart.
- Recognize the effects of sympathetic and parasympathetic stimulation on heart rate, conductivity, and myocardial contraction.
- Analyze various cardiac rhythms and dysrhythmias.
- Analyze basic laboratory tests.
- Describe the components and function of blood.
- Identify appropriate materials for blood specimen collection.
- Identify reasons for complications and failure to obtain blood specimens.
- Identify the purpose of IV infusions.
- Identify the most common sites for venipuncture.
- Recognize abnormal signs and symptoms of electrolyte imbalance.
- Identify the legal limitations in the practice of administering IV therapy.
- Demonstrate proper documentation of IV assessments and management.
- Describe complications of IV therapy, and proper infection control techniques.
- Demonstrate proper techniques for central line care.
- Demonstrate proper technique for administration of IV push medications.
- Utilize proper techniques in performing venipuncture.

NUS 221  Pharmacology for Health Care

This course focuses on pharmacology the nurse needs to know to provide safe and effective care for patients taking medications. Basic principles of pharmacology are reviewed. Medications are grouped for study according to body system and drug action. Emphasis is on application of the nursing process, including patient education, to enhance effectiveness of medication therapy.

Upon successful completion of this course, students should be able to:

- Explain the relationship of pharmacokinetics and pharmacodynamics to drug therapy.
- Describe the mechanisms of action, therapeutic effects, adverse effects, interactions, dosages and administration of commonly used groups of drugs.
- Relate the pharmacodynamics of common groups of drugs to the conditions for which they are prescribed.
- Use the nursing process to develop an age-appropriate plan of care for the patient receiving drug therapy.
- Identify nursing responsibilities for accurate administration of medications.

Prepar. NUS 110, RN's or grad Nurses

3 Credits 3 Weekly Lecture Hours

NUS 222  Holistic Advanced Physical Assessment and Pathophysiology

This course will provide the student with the knowledge and skills to identify abnormal physiologic findings. The student will utilize this knowledge and skill in completing a health history and physical assessment, identifying the patient's biopsychosocial status.

Upon successful completion of this course, students should be able to:

- Use the appropriate communications skills necessary to complete a health history.
- Demonstrate the four examination techniques of inspection, palpation, percussion and auscultation.
- Identify the major cultural variables to be addressed in a health history and physical assessment.
- Complete a health history that includes information on the assessment/functioning of: skin, hair, nails, head, face, neck, ears, nose, throat, eyes, respiratory system, cardiovascular system, neurological system, musculoskeletal system, abdomen, breast and axilla, male and female genitalia.
- Identify body structures and functions that need to be assessed in specific disorders.
- Explain how the signs and symptoms of specific disorders are produced by the alterations in body structure and function.
- Perform a physical assessment on a geriatric patient in the clinical area to validate information obtained in the health history.
- Identify normal and abnormal subjective findings during the geriatric physical assessment in the clinical area.
- Describe the cognitive changes associated with aging and compare and contrast depression, dementia and delirium.
- Understand the concerns for geriatric patients who are taking multiple medications for concurrent management of multiple disease processes.
- Identify critical data during shift report that will support the patient's plan of care in the clinical setting.
- Describe the role of adequate nutrition, hydration, and skin care in preventing wounds in geriatric patients.
- Demonstrate critical thinking skills when caring for geriatric patients with complex disease processes in the clinical setting.
- Use leadership skills in the clinical setting to manage nursing care for patient assignments.

Prerequisites/Co-requirements: Licensure as an RN or LPN for other health care personnel. Completion of an Anatomy and Physiology or Body Structure Function I and II. RN or LPN License

2 Credits 2 Weekly Lecture Hours

(OSC) Occupational Studies

OCS 102  International Code Council (Uniform Construction Code)

This course is designed for the student who desires to become a one- and two-family dwelling building inspector. Fundamental requirements of the UCC (Uniform Construction Code) and assurance to the codes by codepeople as well as enforcement officials will be addressed throughout the course.

Upon successful completion of this course, students should be able to inspect:

- Footings and foundations
- Concrete slabs
- Wood decay and termite protection
- Floor and ceiling framing
- Wall framing
- Roof framing
- Masonary walls
- Sheeting
- Roof covering
- Interior and exterior wall coverings
- Means of egress system
- Safety glazing

3 Credits 3 Weekly Lecture Hours

(PCT) Process Control Tech

PCT 100  Plant Equipment

This course provides an introduction to basic hand tools as well as a study of industrial plant equipment. Topics of study include equipment construction, principles of operation, care, maintenance, and utilization. Various pieces of equipment associated with process systems will be covered. Equipment being studied will include motor drive components, basic material handling equipment, pumps, compressors, valves, boilers, furnaces, turbines, heat exchangers and cooling towers, as well as relevant instrumentation.

Upon successful completion of this course, students should be able to:

- Identify various types of plant equipment commonly found in processing plants.
- List the various types valves, and discuss their basic operational characteristics, as well as their components.
- Explain how pipe is sized, relate the differences between pipe and tubing, and describe how a seal is effected in each design.
- Distinguish between the various types of pumps, compare and contrast their appropriate uses.
- Describe the various types of compressors, compare and contrast their appropriate uses and operational procedures.
PCT 101  Introduction to Process Technology

This course provides an overview of the concepts associated with Process Technology, as well as an introduction to the role of a Process Operators and Process Control Technicians as part of a team in the production environment. The course also provides a basic overview of issues and sciences associated with the refining and production of chemicals. In addition, the course will introduce the student to the real life environment, and the occupational responsibilities and duties of process operators/technicians.

Upon successful completion of this course, students should be able to:
- Discuss the role and responsibilities of a process operator and process control technician.
- Investigate the basic sciences associated with processing industries.
- Identify the need for quality control in a processing environment.
- Demonstrate appropriate behavior within a diverse workplace.
- Discuss the impact of job related work ethics (absenteeism, on-the-job habits, etc.) as they relate to fellow workers, and the mission at hand.
- Relate basic safety, health, and environmental issues associated with the processing industries technology.
- Perform generalized introductory duties while observing acceptable practices for personal safety and health.
- Prepare a potential career profile for a process technician.

Correq. PCT 101
3 Credits 2 Weekly Lecture Hours
2 Weekly Laboratory Hours

PCT 111  Process Control I

This course is designed to provide operators/technicians with an introduction to the basic operating principles of process control systems. Topics of study will include control principles, the elements of process control systems, and process control signals and systems. The course also provides an introductory study of various input and output devices used to control process variables in the petroleum, petrochemical, chemical, pharmaceutical, and food processing industries. Primary emphasis will be placed on processes that require the measurement of frequency, level, flow, and temperature.

Upon successful completion of this course, students should be able to:
- List the basic principles, characteristics and applications of process control systems.
- Describe the various methods used to implement process control systems.
- Explain the methods used to generate process control signals.
- Define the basic concepts concerning transducers, as well as investigate the different types of output devices and signals used to control processes.
- Describe the nature of fluids as well as the causes and effects of hydrostatic and dynamic pressure.
- Describe fluid flow, characteristics of pressure, and pressure head, in regard to process control parameters.
- Describe the instruments, methods and principles of operation used to measure pressure, level, and flow in fluids.
- Determine the various operating conditions of pressure switches.
- Relate the concepts of heat exchange.
- Describe the physical changes heat produces in matter.
- Determine the major differences between AC and DC motor operation, the fundamental methods of controlling each, and some of the problems associated with each type.
- Explain closed loop control system theory relating to the purpose of closed loop control and the different modes of controller operation.
- Discuss some of the more advanced aspects of automatic controllers, with relevance to safety and alarming of controllers.
- Identify the real time limitations and implications and process characteristics required to transmit serial alarming of controllers.
- Conduct stability, contingency, and security assessments via simulated (software) system operations.
- Monitor and control (via simulation software) the operation of interconnected, integrated power plant systems.

Prereq. PCT 100, MAT 110, IST 105
3 Credits 2 Weekly Lecture Hours
2 Weekly Laboratory Hours

PCT 112  Power Plant Processes

In this course, students are introduced to the fundamentals of specialized occupational concepts, theory, and skills associated with equipment, as well as the criteria for appropriate performance as power plant operators. The course is designed to facilitate assimilation of prior knowledge and skills associated with various individual pieces of (typical) plant equipment for the purpose of providing instruction in the function and process of operating sub, as well as integrated system configurations comprised of same. Operational aspects of integrated power generation equipment/systems to include monitoring and controlling functions by the operator will be addressed. Elemental system response and energy management techniques will be studied. The principles and application of operation at a limited scale of control center equipment (via software simulation), to include monitoring and control, will be introduced.

Upon successful completion of this course, students should be able to:
- Identify the role and responsibilities of a power plant operator/process control technician.
- Cite the issues related to day-to-day work ethics that a plant operator must personally engender on-the-job.
- Explain (in general terms) the methods used to generate process control signals.
- Define the principles of electric power generation to include frequency, generator droop, automatic generation control, regulation of reserves, unit sharing, and system stability.
- Relate the characteristics and constraints of power transfer under stable and emergency conditions.
- Relate (at a introductory level) operator decision making and physical actions required for: emergency situation, sub-system restoration, real-time contingency analysis, contingency management, destabilizing events occurrence, determination of early detection/warning symptoms, load loss, and situational awareness at all times.
- Describe the principles, characteristics and applications of process control systems.
- Perform analytical calculations required to make strategic decisions regarding plant operations.
- Demonstrate (via simulation software) a working knowledge of power plant systems' operation.
- Discuss communication and coordination requirements for effective control room operation.
- Conduct stability, contingency, and security assessments via simulated (software) system operations.
- Monitor and control (via simulation software) the operation of interconnected, integrated power plant systems.

Prereq. PCT 100, MAT 111, IST 105
3 Credits 2 Weekly Lecture Hours
2 Weekly Laboratory Hours

PCT 115  Process Control II

This course presents additional theory and application of process control. Integrated topics such as draw-ings, symbols, control loops, measurements and variable measurements will be presented. Additionally, topics to be studied will include, but not be limited to: conductivitv, pH, ORP, various optical measurements, products of combustion, chromatography, and control systems. Process control computers, DCs, and system integration will also be discussed in detail.

Upon successful completion of this course, students should be able to:
- Interpret and use the various types of process control drawings, to include the use of process control symbols and their application.
- Describe the operational characteristics of a typical control loop.
- Compare the different modes of operation of control loops.
- Investigate the four common advanced control methods,
the advantages of each, and their applications in an industrial facility.

- Describe how control loops perform in the time domain and how compensation is affected for time lags in the system response.

- Determine the methods used to protect control loops.

- Explain various types of process control instrumentation used to measure conductivity, pH, ORP, products of combustion and chromatography.

- Discuss the optical analyzer, and how frequency of infrared, ultraviolet and visible light are measured.

- List the products of combustion, and identify the instrumentation used to measure and control it in a process control system.

- List the various types of process control devices including instruments used to measure conductivity, pH, ORP, optical parameters.

- Discuss microprocessors, specifically their application in process control systems.

- Describe the workings of a SCADA system.

- Identify the advantages of automatic process control as well as PLC's (or DCS's) in industrial automation and relate the types of processes control.

- Prereq. PCT 111 and CHE 106

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

PCT 120  Unit Operations

This course provides for a study of the basic principles and operation of the main units associated with the production of product in the processing industries. The primary emphasis of study will focus on processing units operation. Processes involving the principles of fluid mechanics heat transfer including evaporation, mass transfer including distillation, and mechanical separation will be explored. The basic processes being facilitated within the various units will be examined. The interactions and the transactional phenomena occurring during operation of these units will be addressed. The commonalities, results, and effects, associated with various processes will be related to various allied chemical-manufacturing operations. Instructional emphasis will be limited to the relevant theoretical and practical aspects of the subject matter.

Upon successful completion of this course, students should be able to:

- Determine how to analyze a complex process in order to identify sub-processes, as they relate to a unit and its operation.

- Describe a unit's operation and relate whether its processing characteristics entail a chemical or a physical reaction.

- Assist an engineer in solving problems associated with each operation and in some instances; with direction, apply solutions to problems.

- Identify the differences among similar pieces of equipment, their varied operational characteristics, and the safety practices associated with each.

- Troubleshoot basic problems with mechanical equipment and identify and/or recommend necessary corrective action for proper unit operation.

- Identify and correct blockage in fluid lines.

- Recognize problems associated with pumps and identify corrective actions.

- Prereq. MAT 111 or higher and CHE 106

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

(PHI) Philosophy

PHI 100  Introduction to Philosophy

This course is intended for the beginning student in philosophy. This course is an investigation of philosophical problems as they are treated either by historical or contemporary authors. The philosophical problems discussed may include issues taken from the following areas of philosophy: ethics (moral theory and its applications), metaphysics (the study of the basic properties of reality), epistemology (the theory of knowledge), natural theology (arguments for the existence of God that take the natural world as evidence for God's existence), aesthetics (the theory of beauty and its manifestation in art) and political philosophy (the study of ethical principles to govern human society).

Upon successful completion of this course, students should be able to:

- Identify the basic elements of sound reasoning and make a cogent argument for a position.

- Present and analyze the major philosophical problems discussed in class.

- Analyze the major philosophical problems discussed in class.

- Critique the views of the philosophers discussed in class.

- Identify the philosophers discussed in class and present their views.

- Apply the philosophical method of argumentation to issues in daily life.

- Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

PHI 110  Contemporary Moral Problems

This course is intended for the beginning student in philosophy. In this course students, after acquiring basic argumentative skills and some background in moral theory, will examine several different contemporary moral problems. The moral problems discussed may include: the legalization of narcotic drugs, abortion, affirmative action, euthanasia, capital punishment, the ethical treatment of animals, etc. The purpose of the class is to discuss the above issues from a reasoned, philosophical perspective.

Upon successful completion of this course, students should be able to:

- Identify the basic elements of sound reasoning and make a cogent argument for a position.

- Present the major philosophical problems discussed in class.

- Analyze the major philosophical problems discussed in class.

- Critique the views of the philosophers discussed in class.

- Present the ethical theories discussed in class.

- Identify the ethical theories discussed in class.

- Identify the philosophers discussed in class and present their views.

- Apply the philosophical method of argumentation to issues in daily life.

- Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

PHI 101  Technical Physics I

This course is a general survey of physical science including the study of forces, motion, work, energy, sound, electricity, light and optics. The course is intended for non-science majors interested in exploring the concepts of physical science.

Upon successful completion of this course, students should be able to:

- Describe the concept of momentum, identify the factors that control it in each system, and develop and apply expressions for Momentum as found in the four physical systems.

- Describe the concepts of work and power, develop general work and power expressions in terms of Force-like Quantities and Displacements, and apply these expressions to the four physical systems.

- Define the three basic machines and the electrical transformer, apply the concept of work in order to describe their advantage as Force Transformers, and determine the efficiency at which they operate.

- Prereq. or Coreq. MAT 110

3 Credits

2 Weekly Lecture Hours
2 Weekly Laboratory Hours

PHI 102  Technical Physics II

This course is a continuation of Technical Physics I. Here, certain concepts presented in the first semester are expanded in more detail, along with the introduction of new concepts.

Upon successful completion of this course, the student should be able to:

- Describe in mathematical expressions the energy associated with matter or change due to its motion (Kinetic energy) or due to its position or configuration (Potential energy), develop and apply the conservation of energy principle using these expressions, apply the conservation energy principle to the fluidal system (Bernoulli's equation), electrical system (Kirchoff Loop Rule) and the thermal system (1st Law of Thermodynamics), and state the conditions and terms used to describe simple harmonic motion.

- Establish and define the concept of momentum, state the momentum/impulse therefrom, derive the conservation of momentum principle, and relate the concept of momentum to energy transfer in mechanical, fluidal, electrical and thermal systems.

- Establish the concept of an electric field and flux lines, state the electric field expressions for different configurations of charge, establish the concept of a magnetic field, describe the induction effects associated with a moving magnetic field, and describe physical and mathematically the operation of an oscillating inductor-capacitor circuit.

- Describe the creation of an electromagnetic wave, identify the different regions of the electromagnetic spectrum, apply the concepts of physical and geometrical optics to mirrors and lenses.

- Describe the operation of sensors, transducers, and other typical measurement devices by the application of the concepts and principles acquired throughout the course.

- Prereq. PHY 100

3 Credits

3 Weekly Lecture Hours

PHI 105  Physical Science

This course is a general survey of physical science includes the study of forces, motion, work, energy, sound, electricity, light and optics. The course is intended for non-science majors interested in exploring the concepts of physical science.

Upon successful completion of this course, students should be able to:

- Describe the importance of science in contemporary society and how science knowledge is constructed.

- Explain the common units of mass, length, and time in both the English and metric systems and the derived units necessary for the calculations and measurements of the physical phenomena studied in this course.

- Describe the motion of simple objects in terms of distance, velocity, and acceleration.

- Explain the motion of simple objects in terms of forces and energies.
• Discuss the nature of mechanical waves and apply this knowledge to problems involving sound phenomena.
• Generate an explanation of light phenomena using geometrical, reflection, and refraction.
• Discuss the nature of electrostatic forces and electricity concepts such as current, voltage, and resistance.
• Describe magnetic forces and fields and design a simple motor.
• Apply laboratory skills and computer technology to solve problems in a cooperative environment.

Prereq: MAT 060 and REA 050
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

PHY 110 College Physics I
This is a course designed for science majors who are not in the calculus sequence. The course deals primarily with Mechanics and Thermodynamics.

Upon successful completion of this course, students should be able to:
• Describe motion in one dimension
• Apply vector mathematics to explain two-dimensional motion
• Describe and analyze freely-falling objects
• Analyze motion using Newton’s Laws
• Apply conservation laws
• Describe rotational motion
• Analyze oscillatory motion
• Describe and apply the basic concepts of thermodynamics
• Apply laboratory skills and computer-based technologies to solve problems in a cooperative environment.

Prereq: MAT 140
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

PHY 111 College Physics II
This course is a continuation of College Physics I and is designed for Science majors who are not in the University Physics sequence. The course deals primarily with Electricity and Magnetism, Waves and Optics, and Modern Physics topics.

Upon successful completion of this course, the student should be able to:
• Describe electrostatic interactions in terms of force, fields, energy and potential.
• Analyze circuits using Ohm’s Law and Kirchhoff’s Rules.
• Describe the magnetic fields of simple geometries and their interactions with charged objects.
• Define waves and their interactions.
• Apply wave concepts to explain sound phenomena.
• Apply the concepts of geometric and wave optics to the phenomena of refraction, reflection, interference and diffraction.
• Discuss the development of the atomic model and quantum mechanics.
• Use concepts of nuclear physics to describe decay processes.
• Apply laboratory skills and computer technology to solve problems in a cooperative environment.

Prereq: PHY 110, Coreq. MAT 141
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

PHY 131 University Physics I
This course is designed for Natural Science and Engineering majors who are required to take a calculus-based physics course. Dealing primarily with Mechanics and Thermodynamics, the course covers the principles, laws and concepts of electricity and magnetism, including electromagnetic waves and physical and geometrical optics.

Upon successful completion of this course, students should be able to:
• Apply the kinematics equations to determine the linear motion of a particle.
• Use the kinematics equations to determine the rotational motion of a solid.
• Apply Newton’s Laws of motion and gravity to the linear motion of a particle.
• Apply Newton’s Laws of motion to the rotational motion of a solid.
• Know and apply the concepts of work and energy to solids, liquids and gases.
• Utilize the concepts of momentum and conservation of momentum principle to analyze the interactions of particles and solids.
• Use the concepts relating to the material properties of solids, liquids and gases.
• Apply the concepts of periodic motion to solids experiencing simple harmonic motion.
• Develop and use the kinematics and dynamics equations for wave motion as exhibited by liquids and gases.
• Apply laboratory skills and computer technology to solve problems in a cooperative environment.

Prereq: MAT 160
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

PHY 132 University Physics II
This course is a continuation of University Physics I and is designed for Natural Science and Engineering majors who are required to take a calculus-based physics course sequence. Dealing primarily with electricity and magnetism, the course covers the principles, laws and concepts of electrostatics and electromodynamics, including electromagnetic waves and physical and geometrical optics.

Upon successful completion of this course, students should be able to:
• Determine the electric field by the application of Coulomb’s Law and Gauss’s Law.
• Apply the concepts of potential difference, capacitance and resistance to direct and alternating current circuits.
• Utilize Kirchhoff’s Rules to analyze direct and alternating current circuits.
• Calculate magnetic fields by the application of the Biot-Savart Law and Ampere’s Law.
• Apply Faraday’s Law of Induction to explain the effects resulting from changing magnetic fields.
• Use Maxwell’s Equations to explain the creation and properties of an electromagnetic wave.
• Apply the concepts of geometric and wave optics to the phenomena of refraction, reflection, interference and diffraction.
• Apply laboratory skills and computer technology to solve problems in a cooperative environment.

Prereq: PHY 131 Coreq. MAT 161
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

PLB 100 Plumbing Theory I
This course is designed to provide the student with instruction in plumbing practices applicable to all areas of plumbing. Emphasis will be placed on presenting advanced concepts and materials in the plumbing industry. Traditional approaches are covered to ensure that the student receives a broad exposure to all materials and practices that may be encountered in the workplace.

Upon successful completion of this course, students should be able to:
• Perform the addition, subtraction, multiplication and division of fractions.
• Utilize ratio and proportion.
• Define the Pythagorean theorem and show its use in plumbing for finding angles and offsets.
• Solve square roots and perimeter, area, and volume problems.
• Use mathematical concepts as they relate to plumbing projects.
• Define the types of measurements used in plumbing projects.
• Identify the mathematical symbols.
• Define the use of symbols in mathematics.
• Define the use of symbols in plumbing codes.

PLB 101 Plumbing Theory II
This course is designed to stress good solid plumbing practices applicable to all areas of plumbing. Emphasis will be placed on presenting advanced concepts and materials in the plumbing industry. Traditional approaches are covered to ensure that the student receives a broad exposure to all materials and practices that may be encountered in the workplace.

Upon successful completion of this course, students should be able to:
• Test and repair gas piping.
• Describe the relationship of threads per inch to pipe size.
• Identify the various tools for threaded pipe.
• Describe the use of the tools for threaded pipe.
• Explain how pipe is cut, reamed, and threaded.
• Define the terms associated with pipe threading.
• Demonstrate the procedures necessary to properly tighten fittings on pipes.
• Tighten fittings on pipes and valves.
• Define fitting allowance.
• Interpret center-to-center measurements.
• Perform fittings to obtain end-to-end measurements.

Prerequisite: Must be employed by a Master plumber and PLB 100
5 Credits
PLB 101  
- Design a bathroom according to a given plumbing code.
- Rough in the waste for the bathrooms
- Interpret the fitting allowance chart.
- Identify appropriate symbols.
- Design and create a manifold drawing.
- Understand job site hazards and apply safety
  - Be able to:
    - Read blueprints and sketch plumbing features.
    - Describe the types of fixture traps and where they are used.
    - Discuss capillary attraction and evaporation.
    - Identify the various locations and sizes of cleanouts.
    - Discuss the types of traps.
    - Discuss siphonage and its effect on various types of traps.
    - Identify the various responsibilities of public and private
      - Perform the five methods of properly controlling
    - Use the proper tools and test equipment to perform
    - Identify the various locations and sizes of cleanouts.
    - Understand the special regulations for installation of fixtures.
    - Describe the manifold rules and regulations regarding shop safety. It demonstrates the right ways
    - Understand job site hazards and apply safety
    - Design and create a manifold drawing.
    - Identify appropriate symbols.
    - Demonstrate the power threader, soldering and brazing.
    - Create a detailed tool and material list.
    - Complete a manifold project.
    - Interpret the fitting allowance chart.
    - Rough in the waste for the bathrooms
    - Design a bathroom according to a given plumbing code.

PLB 102  
- Size drainage and vent lines.
- Connect and identify appropriate pipelines.
- Identify and operate the vacuum breaker on the
  - Be able to:
    - Describe how the vacuum breaker is used and how to prevent it.
    - Describe the types of fixture traps and where they are used.
    - Identify the various responsibilities of public and private
    - Perform the five methods of properly controlling
    - Use the proper tools and test equipment to perform
    - Identify the various locations and sizes of cleanouts.
    - Understand the special regulations for installation of fixtures.
    - Describe the manifold rules and regulations regarding shop safety. It demonstrates the right ways
    - Understand job site hazards and apply safety
    - Design and create a manifold drawing.
    - Identify appropriate symbols.
    - Demonstrate the power threader, soldering and brazing.
    - Create a detailed tool and material list.
    - Complete a manifold project.
    - Interpret the fitting allowance chart.
    - Rough in the waste for the bathrooms
    - Design a bathroom according to a given plumbing code.

PLB 103  
- Design and create a manifold drawing.
- Understand job site hazards and apply safety
  - Be able to:
    - Read blueprints and sketch plumbing features.
    - Describe the types of fixture traps and where they are used.
    - Identify the various responsibilities of public and private
    - Perform the five methods of properly controlling
    - Use the proper tools and test equipment to perform
    - Identify the various locations and sizes of cleanouts.
    - Understand the special regulations for installation of fixtures.
    - Describe the manifold rules and regulations regarding shop safety. It demonstrates the right ways
    - Understand job site hazards and apply safety
    - Design and create a manifold drawing.
    - Identify appropriate symbols.
    - Demonstrate the power threader, soldering and brazing.
    - Create a detailed tool and material list.
    - Complete a manifold project.
    - Interpret the fitting allowance chart.
    - Rough in the waste for the bathrooms
    - Design a bathroom according to a given plumbing code.
PLB 209  International Plumbing Codes
This course is designed to assist students in understanding codes and adjacent code provisions. It addresses various codes founded upon certain basic principles of environmental sanitation and safety through properly designed, acceptably installed, and adequately maintained plumbing systems will be addressed.

Upon successful completion of this course, students should be able to:
• Correct all plumbing violations.
• Size and design plumbing systems for residential and commercial buildings.
• Define various plumbing systems code.
• Change the direction of flow without restrictions regarding drainage fitting patterns.
• Apply the standards to control all materials, systems, and equipment used in the construction, installation, alteration, repair, or replacement of plumbing or drainage systems parts.
• Test joints and connections in the plumbing system requiring gas tight and watertight for the pressure required.
• Apply the plumbing code regarding how fixtures shall be separately trapped by a water seal trap and placed as close as possible to the fixture outlet.
• Demonstrate the proper handling of liquid waste containing grease, flammable wastes and other ingredients harmful to the building drainage system.
• Confirm the requirements for plumbing fixtures for accessible use and their installation.
Prerequisite: Must be employed by a master plumber
5 Credits

(PLG) Paralegal Studies

PLG 100  Introduction to Paralegal
This course focuses on four specific areas of the para-legal profession: (1) the role of the paralegal in the legal profession, (2) the legal and ethical rules that determine unauthorized practice, (3) an understanding of the judicial system at the federal, state and local level, and (4) the various areas of law-civil and criminal with emphasis on the legal terminology associated with each area.

Upon successful completion of this course, students should be able to:
• Describe the role of the paralegal in the legal profession.
• Describe the judicial system at the federal, state, and local level.
• Describe those public agencies that operate as law firms (Office of the Attorney General, Office of the District Attorney, Public Defender, and Legal Aid Society). Describe the jurisdiction of various governmental agencies.
• Apply relevant modern technologies.
• Discuss relevant ethical issues.
Prerequisite: ENG 050 and REA 050
3 Credits

3 Weekly Lecture Hours

PLG 110  Legal Research & Writing I
This course teaches students basic techniques of legal research. Students will be taught the use of primary legal information sources including statutes, cases, rules and regulations, as well as secondary sources including digests, legal encyclopedias and commentaries on the law. The role of technology in legal research and writing will also be discussed.

Upon successful completion of this course, students should be able to:
• Identify terminology associated with legal research.
• Differentiate between the various sources used to research the law.
• Use different methods to research legal problems.
• Use the computer to do legal research.
• Discuss the methods for analyzing legal research, for identifying issues, for applying law to the facts, and for preparing and writing appropriate memoranda.
• Write legal memoranda that demonstrate an understanding of legal issues.
• Discuss relevant ethics issues.
• Apply relevant modern technologies.
Prerequisite: ENG 110
3 Credits

3 Weekly Lecture Hours

PLG 120  Legal Research & Writing II
This course is a continuation of Legal Research and Writing I. In this course, students will be introduced to the analysis of legal problems, the preparation of legal briefs, memoranda and other legal documents. The applicability of research and the law to factual situations is stressed.

Upon successful completion of this course, students should be able to:
• Prepare various legal documents.
• Apply principles of legal research to factual situations in written memoranda of law and briefs.
• Use proper methods of formatting legal documents and research references in legal documents.
• Use correct methods of citing legal references.
• Compose basic written communications that are part of the practice of law.
• Analyze reported cases and statutes.
• Use and apply current forms of technology to perform legal research.
• Discuss relevant ethics issues.
• Apply relevant modern technologies.
Prerequisite: ENG 110
3 Credits

3 Weekly Lecture Hours

PLG 140  Contract Law
This is a course in basic contract law. Among the topics covered are the elements of a contract, the parties to a contract, modes of discharging a contract and the remedies available upon breach of a contract. Included in the course is a study of the Sales and Commercial paper provisions of the Uniform Commercial Code. Specific contracts and draft documents that are subject of much litigation are examined and discussed. Students are required to draft simple agreements.

Upon successful completion of this course, students should be able to:
• Discuss the elements of a contract.
• Analyze the parties to a contract.
• Compare and/or contrast different contractual agreements.
• Explain the various modes of discharging a contract.
• Analyze the remedies available for breach of contract.
• Analyze the provisions of the Uniform Commercial Code with emphasis on Article 2 (Sales) and Article 3 (Commercial Paper).
• Analyze specific sales contracts and draft documents that comply with UCC requirements.
• Compare and contrast contracts that are the subject of much litigation, such as Homeowner's Insurance policies, automobile insurance policies, commercial fire policies, commercial liability policies, professional liability policies, employment agreements, bailment contracts, lease agreements and agency agreements.
• Draft a simple contract.
• Discuss relevant ethical issues.
• Apply relevant modern technologies.
Prerequisite: PLG 110
3 Credits

3 Weekly Lecture Hours

PLG 200  Family Law
This course introduces students to the procedural and substantive law affecting the family and domestic relations. The law affecting prenuptial agreements, separation, divorce, spousal support, alimony, spousal abuse, custody, child support and adoption is discussed. Emphasis is placed on the preparation of relevant legal documents and procedures for filing.

Upon successful completion of this course, students should be able to:
• Discuss the basic principles of family and domestic relations law.
• Research family law and domestic relations issues.
• Analyze specific divorce remedies.
• Prepare legal documents applicable to court rules and regulations in a family or domestic relations case.
• Discuss the role of human relations, emotional sensitivity, in domestic relations cases.
• Discuss the relevant ethical issues.
• Apply relevant modern technologies.
Prerequisite: PLG 120
3 Credits

3 Weekly Lecture Hours

PLG 210  Civil Litigation and Tort Principles
This course focuses on the legal foundation of negligence law as applied to different factual situations. Students learn the applicable methods of negligence dispute resolution through the litigation process and through alternative methods such as arbitration and mediation.

Upon successful completion of this course, students should be able to:
• Analyze basic negligence liability concepts applied to various intentional and unintentional torts and the applicable defenses.
• Discuss the theories of damage recovery applicable to tort matters.
• Relate fundamental principles of insurance as applied to tort litigation field. Discuss negligence problem resolution through court litigation and through the alternative remedies of negotiation, arbitration, and mediation.
• Discuss relevant ethical issues.
• Apply relevant modern technologies.
Prerequisite: PLG 120
3 Credits

3 Weekly Lecture Hours

PLG 211  Civil Litigation and Tort Applications
This course focuses on the applications of the principles of tort law and civil litigation learned in the Civil Litigation and Tort Law Principles (PLG 210). Emphasis in this course is on the paralegal's role in the civil and litigation process.

Upon successful completion of this course, students should be able to:
• Discuss the system of dispute resolution through the state and federal court systems and other alternative dispute resolution methods applicable to negligence cases.
• Describe the different parts of a negligence trial and the documents applicable to each part of the trial.
• Identify the applicable Court Rules of Civil Procedure and rules of evidence.
• Describe the role of the paralegal in writing briefs and researching the law applicable to particular negligence cases.
• Identify the role of the paralegal in the factual development of cases, interviewing clients and witnesses, writing reports, locating documents, accumulating evidence and managing case files.
• Prepare and write pleadings and other documents filed with the court, prepare for discovery and develop appropriate trial documents used in personal injury litigation.
• Discuss ethical issues.
• Apply relevant modern technologies.
Prerequisite: PLG 210
3 Credits

3 Weekly Lecture Hours
PLG 220  Real Estate Law
This course provides an introduction to real-property law. Emphasis is placed on real estate transactions and the tasks performed by lawyers and their legal representatives in representing buyers and sellers in the transfer of real-property interest. Real-property law is analyzed including possession and ownership of property, nuisance, present and future estates, landlord and tenant, easements, conveyancing, recording, land-title assurance, vendor and purchaser, and zoning controls is analyzed.

Upon successful completion of this course, students should be able to:
- Analyze the basic principles of property law.
- Conduct client interviews and searches in a real estate case.
- Apply principles of real-property law to the preparation of forms common to real estate transactions.
- Discuss relevant ethical issues.
- Apply relevant modern technologies.

Prereq. PLG 110
3 Credits  3 Weekly Lecture Hours

PLG 230  Estates, Trusts and Wills
This is a task-oriented course that emphasizes the terminology, forms and procedures of probate and estate administration. Students also learn to draft a simple trust and a will.

Upon successful completion of this course, students should be able to:
- List and describe the duties of an estate paralegal.
- Construct a family tree for the decedent and determine which of the decedent’s surviving relatives are entitled to share (and to what degree) in the decedent’s estate.
- Gather necessary information to complete and file petitions for Letters.
- Apply the rules concerning advertising of the grant of Letters and identify the reasons for and advantages of advertising.
- Complete the renunciation form.
- Identify and differentiate between various grounds for contesting a will.
- Calculate the surviving spouse’s elective share.
- Identify and differentiate between survival actions and wrongful death options.
- Gather information, complete and file various State and Federal tax returns.
- Draft and file a basic accounting with the Probate Court.
- Draft and file Satisfaction of Reward/Receipts and Releases.
- Identify procedures for handling small estates and ancillary administration.
- Draft a simple trust.
- Apply relevant modern technologies.
- Discuss relevant ethical issues.

Prereq. PLG 120
3 Credits  3 Weekly Lecture Hours

PLG 240  Criminal Law
This course introduces students to the criminal legal system and the role of the paralegal within its framework. Emphasis is placed on the basic principles of substantive and procedural criminal law under state and federal statutes, the preparation of legal documents relevant to criminal cases and the disposal of criminal cases.

Upon successful completion of this course, students should be able to:
- Discuss the basic principles of criminal law.
- Prepare legal documents relevant to criminal cases and procedures.
- Prepare a disposition of an assigned criminal case.

Prereq. PLG 110
3 Credits  3 Weekly Lecture Hours

PLG 241  Administrative Law
This course introduces paralegal students to the laws involving administration of government by various departments, agencies, boards and commissions that implement and enforce government law and policy. Students are taught the laws and procedures affecting the administrative decision-making processes on a local, state and federal government level.

Upon successful completion of this course, students should be able to:
- Describe the scope and application of Administrative Law.
- Describe the constitutional and statutory legal bases of administrative law and administration agencies on a local, state and federal level of government.
- Describe and analyze the rules, procedures and practices of government departments, agencies, boards and commissions for making rules, conducting hearings and making decisions.
- Describe and analyze the scope of authority and jurisdiction for various governmental departments, agencies, boards and commissions.
- Analyze the administrative, quasi-legislative and quasi-judicial functions of administrative departments.
- Analyze the role of legislative body, courts, statutory limits on governmental immunity and the constitution in limiting the exercise of power and authority by state, federal and local government departments, agencies, boards and commissions.
- Analyze the procedures to be followed pursuant to specific statutes: Workmen’s Compensation Act for Commonwealth of Pennsylvania; Public Utility Commission; Bureau of Professional and Occupational Affairs; Securities Commission; and the Human Relations Commission.
- Analyze the procedures to be followed with regard to the U.S. Social Security Administration (claims and appeals); various environmental protection statutes; acts involving wages and benefits; various labor protection acts; acts that prohibit discrimination, viz., Equal Pay Act, Age Discrimination Employment Act, Civil Rights Act, Title VIII.
- Analyze the procedures to be followed with regard to local zoning, licensing and building codes.
- Describe statutes that protect the public from the government including Freedom of Information Acts, Sunshine Laws (including municipal sunshine laws) and Privacy acts.
- Discuss relevant ethical issues.
- Apply relevant modern technologies.

Prereq. PLG 110
3 Credits  3 Weekly Lecture Hours

PLG 242  Business Organizations
This course focuses on the law of business organizations. Emphasis in the course is on corporations from formation to dissolution.

Upon successful completion of this course, students should be able to:
- Differentiate between a sole proprietorship and different types of partnerships.
- Create a corporation and identify the characteristics of a corporation that make it an important and separate legal entity.
- Describe the financial structure of a corporation.
- Describe the formalities of the operation of a corporation.
- Differentiate between a corporation which operates in one state and multi-state corporations.
- Describe the ways in which corporate structure can be changed and the reasons that may precipitate such a change.
- Discuss relevant ethical issues.
- Apply relevant modern technologies.

Prereq. PLG 110
3 Credits  3 Weekly Lecture Hours

PLG 243  Bankruptcy Law
This specialized paralegal course focuses on what the paralegal needs to know about bankruptcy. Emphasis is on the preparation of the various forms required in processing different types of bankruptcy cases. Emphasis is also on learning the terminology applicable and unique to bankruptcy law.

Upon successful completion of this course, students should be able to:
- Identify the terminology applied to bankruptcy law and practice.
- Investigate and prepare bankruptcy petitions and schedules.
- Describe and prepare forms necessary to process a bankruptcy case.
- Identify and describe in detail the ordinary steps in the process of filing and administering a bankruptcy case.
- Identify the different types of bankruptcy proceedings and the forms necessary for filing each type.
- Distinguish between personal bankruptcy and corporate bankruptcy.
- Describe the effects of a bankruptcy filing on an individual and on a corporation.
- Identify the exemptions which may be claimed in a bankruptcy.
- Contrast the differences between a bankruptcy and a reorganization plan and be able to process them accordingly.
- Find, analyze and follow the local bankruptcy court rules.
- Discuss relevant ethical issues.
- Apply relevant modern technologies.

Prereq. PLG 120
3 Credits  3 Weekly Lecture Hours

PLG 244  Labor & Employment Law
This course focuses on the identification and application of laws regulating the interactions among employers, employees, and labor organizations representing employees. Emphasis is on the paralegal’s role in labor contract negotiations, administrative and alternative dispute resolution proceedings concerning labor disputes, and the civil litigation process that arises from such disputes in both federal and state courts.

Upon successful completion of this course, students should be able to:
- Identify and discuss the labor and employment laws applicable to employer/employee relationships.
- Discuss the rules and procedures and evidence applicable to administrative proceedings, labor arbitration, and court proceedings involving labor disputes.
- Describe the role of the paralegal in providing litigation support in administrative proceedings, arbitration, and court proceedings involving labor disputes.
- Identify the role of the paralegal in providing support for collective bargaining negotiations.
- Prepare and write contract negotiation proposals, grievances and demands for arbitration, unfair labor practice charges, employment discrimination claims, and post-arbitration letter briefs.
- Discuss relevant ethical issues.
- Apply relevant modern technologies.

Prereq. ENG 050, REA 050 and MAT 040
3 Credits  3 Weekly Lecture Hours

PLG 246  Elder Law
This course will cover various aspects of law that have particular application to the elderly client. The course is designed to familiarize the student with the practical and theoretical aspects of elder law. As more and more Americans age, legislators, jurists, and other legal professionals have to address the social and legal needs of the elderly including healthcare, employment, housing, guardianship, and elder abuse problems.
Upon successful completion of this course, students should be able to:

- Discuss the basic concept of the legal definition of “elder”.
- Evaluate the legislative responses to the aging population.
- Discuss the various types of health care problems that face the elderly.
- Discuss employment and income issues as they affect the elderly.
- Analyze the various statutes that have been enacted to assist the elderly with housing problems.
- Discuss the concept of guardianship.
- Identify effective estate planning.
- Analyze the concept of elder abuse and apply remedies for abuse.
- Discuss the agencies that provide assistance to the elderly.
- Discuss relevant ethical issues.
- Apply relevant modern technologies.

Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

**POL 100 American Government**


Upon successful completion of this course, students should be able to:

- Perform the basic citizenship skills necessary to fulfill their role as an American citizen.
- Describe the key principles of government essential to our constitutional system.
- Explain the constitutional functions of American federalism.
- Describe the basic functions of government performed by the major institutions of the American national government.
- Explain the major functions of state government institutions in our system.
- Explain the major purpose of political parties in our system of government.

3 Credits 3 Weekly Lecture Hours

**POL 110 Introduction to Political Science**

This course explores the fundamental concepts in the discipline of political science and the philosophical foundation of the American system of government.

Upon successful completion of this course, students should be able to:

- Distinguish between political philosophy and political science.
- State and explain the basic issues confronting man as a political animal.
- State and define the essential concepts in the discipline of political science.
- Demonstrate an understanding of the philosophical foundations of the American system of government.

3 Credits 3 Weekly Lecture Hours

**POL 120 American National Government**

This course is designed to encourage, enhance and heighten the student’s enlightened participation in our democratic society.

Upon successful completion of this course, students should be able to:

- Analyze the nature and roots of their role as an American citizen.
- Enumerate those principles of government considered essential to our constitutional system.
- Explain the constitutional basis of American federalism.
- Understand the fundamental concepts, functions and process of politics and the institutions of our national government.

3 Credits 3 Weekly Lecture Hours

**POL 130 American State and Local Government**

An analytical study of the powers, process and problems of American state, county and local governments. Careful consideration of the nature of political, legislative, administrative and judicial organization at the state, county and city level will be given. Upon successful completion of the course, students should be able to:

- List the development of the six major historical periods in the evolution of American state and local government. Define federalism and two other major forms of governmental structure. Identify the nature, functions, structure and legal position of local government in American federalism. Trace the structure, functions and problems of the three branches of American state government with emphasis on Pennsylvania.

3 Credits 3 Weekly Lecture Hours

**POL 140 American Presidency**

This course is a study and analysis of the historical and political influences upon the institution of the modern American presidency.

Upon successful completion of this course, students should be able to:

- Explain the forces and participants involved in the dynamics of the compromise of the Constitutional Convention, which shaped the establishment of an executive branch.
- Identify the constitutional model and proper role of the president in the doctrine of separation of power.
- Discuss the constitutional powers of the president that overlap within the other two branches. Include some relevant and modern issues that are sources of controversy regarding their administration.
- Trace the historical evolution of the president within the confines of the constitutional and non-constitutional functions of the office.
- Critique the present method of nominating presidential candidates and election of the chief executive.
- Identify those presidents who have made the most significant contributions to the evolution of the office.
- Explain the impact of television, campaign financing and the expectations of the American people toward the office of president.

3 Credits 3 Weekly Lecture Hours

**PSY 120 Achievement Motivation**

A systematic approach that allows students to experience and learn what achievement motivation is and how to use it to increase personal effectiveness. Games, simulated life experiences and a programmed text are used to create the opportunity to learn more about themselves and to experience how the sharing of human resources allows for personal growth.

Upon successful completion of this course, students should be able to:

- Evaluate at least one example of each of the four action strategies presented in McClelland’s theory.
- Identify all of the 10 thoughts and feelings presented in McClelland’s theory.
- Identify their motives in at least one course simulation exercise and one future goal.
- Identify some of their risk-taking patterns, personal goals, feelings, values and basic motives.

Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

**PSY 130 Personal and Career Development**

This course gives students the opportunity to examine the relationship between personality traits, interests, skills and values, and appropriate life choices.

Upon successful completion of this course, students should be able to:

- Identify personal strengths and weaknesses.
- Describe the requisite skills of the major employment clusters.
- Make career decisions appropriate to the student’s own current development.
- Employ appropriate techniques in effecting career decisions.

Coreq. ENG 050 and REA 050 or pass test
3 Credits 3 Weekly Lecture Hours

**PSY 140 General Psychology**

This course is a one-semester introduction to the basic principles and major theoretical approaches that are used to explain human behavior, with emphasis on understanding and application of such principles and theories as they relate to ourselves and our surroundings.
PSY 202 Counseling Skills

This experiential course is a one-semester introduction to the basic skills used in interviewing and counseling adults. Designed for individuals pursuing a career in human service, the focus is on developing the core skills necessary to facilitate effective helping relationships. This course includes both didactic instruction and the development of basic techniques through applied counseling role activities.

Upon successful completion of this course, students should be able to:
- Evaluate the differences and similarities among interviewing, counseling and psychotherapy.
- Explain the characteristics of a multicultural competent counselor.
- Describe core ethical principles in interviewing and counseling.
- Identify the elements of an informed consent form.
- Demonstrate effective verbal and nonverbal attending behavior.
- Evaluate the effectiveness of open and closed questions.
- Demonstrate the foundational active listening skills of encouraging, paraphrasing, and summarizing.
- Demonstrate reflection of feelings skills.
- Demonstrate basic confrontation and challenging skills.
- Demonstrate reflection of meaning skills.
- Explain the concept of immediacy in a counseling relationship.
- Evaluate the influencing skills of self-disclosure and feedback.
- Describe the goal setting and action stages of counseling.
- Explain how basic counseling skills and concepts fit with various theoretical models of psychotherapy.
- Describe the importance of advocacy, community awareness and social change in counseling.
- Conduct an interview using only listening skills.

Suggested co-requisite - Theories of Counseling (PSY 205)

Prereq. PSY 140, ENG 100

3 Credits 3 Weekly Lecture Hours

PSY 204 Foundations of Addictions

The main goal of this course is for students to develop knowledge of the nature and complexity of addiction. Emphasis in this course is on understanding and applying the major theoretical perspectives of the addiction process utilizing a biopsychosocial perspective. The roles of trauma, family dynamics, and biological predisposition will be explored. Topics examined include, but are not limited to, addictions to substances, gambling, shopping, eating, internet use, and sex. Treatment options will be discussed.

Upon successful completion of this course, students should be able to:
- Demonstrate an understanding of theoretical foundations of addiction.
- Explain societal issues associated with addictions.
- Understand the contribution of psychological perspectives to addiction.
- Explain the techniques involved in treatment of addiction.
- Identify programs that provide prevention services as interventions.
- Develop a working knowledge of 12-Step Programs and their benefits to addicted persons and their families.
- Identify the elements of a therapeutic alliance.
- Evaluate the similarities and differences involving addictions to legal substances (tobacco, alcohol, food, prescribed medications) vs. illegal substances (cocaaine, marijuana, heroin).
- Define populations where addictions are highly prevalent and determine risk factors which may be contributing to this.

Prereq. PSY 140 or SOC 110 or HUS 101

3 Credits 3 Weekly Lecture Hours

PSY 205 Human Sexual Behavior

Utilizing a biopsychosocial model, this course seeks to foster healthy attitudes toward sexuality by providing knowledge and having discussions about the formation of sexual beliefs and myths, the anatomy and physiology of human sexual systems, the physiological and social aspects of sex and gender roles, love and sexuality, sexual minorities, and the legal aspects of sexuality. (Note: material of a sensitive nature will be discussed in this course).

Upon successful completion of this course, students should be able:
- Discuss human sexuality from historical and multicultural perspectives.
- Define major theoretical perspectives that influence the scientific study of human sexuality.
- Describe human sexual anatomy and physiology, arousal and response, conception and contraception, sexually transmitted diseases, and varieties of sexual life styles, relationships, and practices.
- Engage in discourse on gender as it relates to sexuality and society.
- Recognize paraphilias and the changing nature of social acceptance for abnormal behaviors.

Prereq. PSY 140 or SOC 110

3 Credits 3 Weekly Lecture Hours

PSY 210 Lifespan Human Development

This course is a one-semester elective in which the major processes of human development from birth to death are described and explained.

Upon successful completion of this course, students should be able to:
- Identify and evaluate the basic universal principles underlying human development.
- Identify and describe the major physical and psychological characteristics of prenatal development, infancy, childhood, adolescence, maturity and aging.
- Describe, evaluate and compare the various theoretical approaches to cognitive, emotional, language, personality and social development throughout the life span.

Prereq. PSY 140

3 Credits 3 Weekly Lecture Hours

PSY 215 Industrial Psychology

The study of organizations and groups from a psychological perspective. The course covers fundamentals of organizational behavior, motivation and reward systems, leadership and organizational change, rumor, resistance to change, management styles and stress as it applies to the workplace. It is designed to meet the special needs of business administration students, as well as business management and psychology majors. It will also prove of great value to anyone contemplating any supervisory or management position, such as in nursing, education, social work and construction technology.

Upon successful completion of this course, students should be able to:
- Define organizational behavior, list the key elements and understand why it is important to understand the psychological principles affecting the workplace.
- Understand and explain a motivational theory that pertains to industrial and organizational psychology.
- Understand the nature of organizational communications, including the factors that influence decision making.
- Understand the nature of leadership and be able to list at least three leadership skills.
- Explain "social environment" conformity.
- Understand the power of rumor and how it might be controlled.
- Explain the concept of industrial participation by employees including: (1) process, (2) prerequisites, (3) benefits, (4) types, and (5) limitations.
- Be familiar with the social problems and ethical issues that cause stress and distress in the workplace.
- Know the various responsibilities incumbent upon worker and employer regarding referral and treatment of social problems in industry.
- Understand the nature of "change" in the workplace.

Prereq. PSY 140

**3 Credits 3 Weekly Lecture Hours**

### PSY 220 Abnormal Psychology

The nature of abnormal behavior, its etiology and classification together with a brief examination of treatment methods are emphasized. Psychoanalytic, behavioral, cognitive and sociocultural perspectives on psychopathology are examined within a biopsychosocial framework.

Upon successful completion of this course, students should be able to:
- Discuss, describe and compare ambiguities inherent in the definition of abnormal behavior.
- Discuss, describe and compare various theoretical perspectives regarding the causation of psychopathology.
- Identify, describe and compare the behaviors defining the general categories of abnormal behavior and the types within these categories.
- List, define and differentiate among the principal medical, psychological and behavioral therapies used today, citing advantages and disadvantages.

Prereq. PSY 140

**3 Credits 3 Weekly Lecture Hours**

### PSY 221 Social Psychology

This course examines how the thoughts, feelings and behavior of an individual are influenced by the actual, imagined or implied presence of others with the goal of understanding social reality.

Upon successful completion of this course, students should be able to:
- Explain five major socio-psychological theories.
- Delineate the major methods of studying human behavior.
- Analyze and explain sex-role behavior.
- Depict the impact of violence on the individual, the group and our society.
- Assess the significance of attitudes on perception, moral judgment, prejudice and prosocial behavior.
- Cite the components of the authoritarian personality and its threat to individual freedom.
- List the major advantages and disadvantages of persons and task-oriented leadership in groups and organizations.

Prereq. PSY 140 or SOC 110

**3 Credits 3 Weekly Lecture Hours**

### PSY 225 Experiences in Diversity

This course critically examines societal and personal attitudes, values and norms regarding diversity. Topics include: race, ethnicity, gender and sexual preference. We will examine how these factors influence our perception of self and others.

Upon successful completion of the course, students should be able to:
- Demonstrate critical thinking on issues of race, gender, ethnicity and sexual orientation.
- Describe the impact of minority and majority status as it pertains to economic, psychological and social experience.
- Describe the etiology of racism, sexism, ethnocentrism and homophobia.
- List some of the contradictions of our multicultural society and different strategies toward resolving them.
- Evaluate the positive and negative dimensions of your own cultural experience. Identify personal values that promote understanding and cooperation among human beings.
- Discuss how culture and gender shape our personal identities and behaviors.

Prereq. SOC 110 or PSY 140

**3 Credits 3 Weekly Lecture Hours**

### PSY 235 Educational Psychology

This course addresses psychological principles, cognitive development and learning theories applicable to students, the learning process and the classroom teacher. Focus areas include human growth and development, learning theory, motivation theory, instructional and school practices, individual differences, student interpersonal and group behavior, classroom management and organization, the teacher as an action researcher, and assessment of performance.

Upon successful completion of this course, students should be able to:
- Describe how educational psychology is used by teachers.
- Differentiate the various theories applied to cognitive, language, psychosocial, emotional, and moral development of children and adolescents.
- Understand developmentally appropriate teaching/learning practices and design lessons based on them.
- Describe and adapt to the diversity of students in terms of special needs, personality, social-cultural, linguistic, intelligence and learning style characteristics.
- Describe and apply behavioral and social learning approaches.
- Describe and apply cognitive information-processing and constructivist learning approaches.
- Apply various theories and practices related to student motivation.
- Identify factors of classroom management and effective classroom climates.
- Explain what is meant by group differences and individual differences and their implications for instruction and learning.
- Describe various instructional design approaches.
- Describe important topics related to classroom assessment (measurement and evaluation).
- Explain the development, uses, and limitations of standardized tests in education.

Prereq. PSY 140

**3 Credits 3 Weekly Lecture Hours**

### PSY 241 Child Psychology

This course is a cross-cultural examination of current research, theories and issues in the physical, cognitive, social and psychological development of children from prenatal development to adolescence.

Upon successful completion of this course, students should be able to:
- Identify the basic principles underlying development through childhood.
- Identify the major physical and psychological characteristics of prenatal development, infancy, childhood and adolescence.
- Evaluate the various theoretical approaches to cognitive, emotional, social and personality development through childhood.
- Identify cross-cultural research findings and their relevance to the study of child development.

Prereq. PSY 140

**3 Credits 3 Weekly Lecture Hours**

### RAD 100 Introduction to Radiation Therapy

This is an introductory course designed to provide students with an overview of the fundamentals of radiation therapy and the radiation therapist's role in the health care delivery system. Principles, practices and policies of the educational program, health care systems, principles of radiation and health safety and professional responsibilities of the radiation therapist will be discussed and examined.

Upon successful completion of this course, students should be able to:
- Discuss the policies and procedures of the program and clinical education settings as well as identify the responsibilities of the radiation therapy student.
- Define cancer management principles and key terms in radiation therapy and identify pertinent library/internet resources pertinent to radiation therapy.
- Discuss the responsibility of patient, staff and facility confidentiality and identity contents/sections of patient's records.
- Discuss and identify the relationship of other health science professions and health care providers that participate in the patient's total healthcare as well as the philosophy/mission of health care systems and educational programs.
- Explain radiation and health safety procedures for radiation therapy, personnel and patients.
- Differentiate and explain the difference between regulatory, educational, institutional, national, state and local organizations.
- Discuss the radiation therapist Scope of Practice, Practice Standards and Code of Ethics, career advancement and opportunities for radiation therapists and benefits for continuing education.

Prerequisite: Program Acceptance

**2 Credits 2 Weekly Lecture Hours**

### RAD 105 Clinical Education I

Clinical Education I is the first part of four clinical educational experiences for radiation therapy students. Clinical education incorporates the classroom components into an applied format.

Upon successful completion of this course, students should be able to:
- Practice appropriate patient care and communication at all times and maintain patient modesty.
- With assistance, operate all modes and functions of the treatment machine and console and accurately set up patients with the proper parameters.
• With assistance, demonstrate familiarity with the treatment chart and accurately record data.
• Observe and assist in all treatment procedures taking place in your assigned area.
• With assistance, take weekly port films, review the port films and submit them for physician approval.

RAD 110 Radiation Therapy Techniques & Applications
This course is designed to provide an overview of general pathology. General pathology introduces basic disease concepts, theories of disease causation and system-by-system pathophysiologic disorders most frequently encountered in clinical practice.

RAD 120 Pathology
This course is designed to give students an overview of general pathology. General pathology introduces basic disease concepts, theories of disease causation and system-by-system pathophysiologic disorders most frequently encountered in clinical practice.

RAD 125 Radiobiology and Safety
This course is designed to present basic concepts and principles of radiobiology and radiation safety. Radiation interactions, theories and principles will be addressed. Radiation health and safety requirements of regulatory and accrediting agencies will also be addressed. Specific responsibilities of the radiation therapist are discussed as well.

RAD 130 Radiation Therapy Physics
This course is designed to review and expand on the concepts and theories reviewed in radiation physics from a Radiologic Technology program or Radiation Physics course. Detailed analysis of the structure of matter, properties of radiation, nuclear transformations, x-ray production and interactions of ionizing radiation are emphasized. Also presented are treatment units used in radiation therapy, measurement and quality of ionizing radiation produced, absorbed dose measurement, dose distribution and scatter analysis.

RAD 135 Quality Management in Radiation Therapy
This course is designed to give students a comprehensive overview of quality management (QM) programs and continuing quality improvements in radiation oncology. A quality management program is a set of policies and procedures to maintain the quality of patient care. Topics will include: the need for quality management (QM) checks, the types of evaluations and tests performed on radiation therapy equipment, the role of the radiation therapist in the QM process, legal and regulatory implications for maintaining appropriate QM guidelines as well as the role of computers and information systems in the radiation oncology department.

RAD 138 Oncologic Patient Care & Ethical/Legal Issues
This course is designed to provide the student with foundation concepts and competencies in assessment and evaluation of the patient for service delivery of the cancer patient. Psychological and physical needs and factors affecting treatment outcome will be presented and examined. Routine and emergency care procedures will be presented.

Upon successful completion of this course, students should be able to:
• Apply the Radiation Therapist Scope of Practice & Code of Ethics to clinical practice, differentiate the roles and responsibilities of the health care team and demonstrate applications of professional self care.
• Explain the dynamics of communicating with the cancer patient and family, and to be able to answer questions as well as identify factors that influence emotional responses as well as psychological aspects of dying.
• Assess the condition of the patient before, during and after treatment and procedures.
• Demonstrate principles of health and radiation safety and what to do in the event of an emergency.
• Define principles of medication, conventional and alternative medicine, ability to recognize common medications for their actions, side effects and adverse reactions.

RAD 140 Radiation Therapy Treatment Planning
This course is designed to establish factors that influence and govern clinical planning of patient treatment. Emphasized are isodose descriptions, patient contouring, radiobiologic considerations, dosimetric calculations, compensation and clinical application of treatment beams.

Upon successful completion of this course, students should be able to:
• Define and describe the characteristics of a radiation beam, factors that effect it, and beam geometry
• Define and describe the various methods of treatment delivery and what considerations are necessary
• Demonstrate the ability to perform various mathematical calculations pertinent to radiation therapy
Clinical Education III is the third phase of radiation therapy students' clinical experience. Clinical education incorporates the classroom theoretical components into an applied format. During this third clinical education experience students should demonstrate the ability to operate radiation therapy equipment, apply key fundamentals of treatment planning to their clinical experience, and interact and care for cancer patients effectively and compassionately.

Upon successful completion of this course, students should be able to:
• Define and describe the various types of treatment techniques and equipment associated with radiation therapy delivery.
• Define and describe the various aspects of radiation therapy dosimetry.

Prereq. RAD 110
3 Credits 3 Weekly Lecture Hours

RAD 200 Clinical Education III

Clinical Education III is the third phase of radiation therapy students' clinical experience. It is provided over during the fall semester of the Radiation Therapy Program. Clinical education incorporates the classroom theoretical components into an applied practice format. During this third clinical experience students should demonstrate the ability to operate radiation therapy equipment, apply key fundamentals of treatment planning to their clinical experience, and interact and care for cancer patients effectively and compassionately.

Upon successful completion of this course, students should be able to:
• Practice appropriate and safe patient care and communication at all times while maintaining patient modesty during procedures.
• Prepare room for simulation procedures and position the patient according to the physician's instructions.
• Safely operate all modes and functions of the simulator.
• Observe and assist in all simulation procedures.
• Demonstrate familiarity with the treatment chart and be able to prepare a treatment chart.
• Set up simple and intermediate simulation fields using the correct parameters, accessories, and alignment devices.
• With assistance set up complex treatment fields using correct parameters, accessories, and alignment devices.

Prereq. RAD 200
4 Credits 24 Weekly Laboratory Hours

RAD 220 Seminar I-CQI & Board Review

This course will be divided into two parts: Continuous Quality Improvement and Board Exam Review. Continuous Quality Improvement is the continuous study and improvement of the health care services to meet the needs of patients and their families. Continuous Quality Improvement includes CQI project development, evaluation, and assessment techniques. Human resource issues, accrediting agencies, and the radiologist's role in that process will also be addressed. Billing and reimbursement issues pertinent to radiation therapy will also be presented. Board Exam Review will include mock exams that address similar questions that students will be confronted with once they take the certification exam.

Material covered will be radiation protection and quality assurance, clinical concepts in radiation oncology, treatment planning and delivery, and patient care and education.

Upon successful completion of this course, students should be able to:
• Define what CQI is and the tools and principles for specific situations and the difference from QA.
• Define human resources' role in the work environment.

Prereq. RAD 030, ESL 045 or pass test
3 Credits 3 Weekly Lecture Hours

REA 030 Reading I

This initial course is for students who need to improve upon basic skills that aid in reading. This course is designed for students who must strengthen their comprehension, language usage, and strategic reading skills.

Upon successful completion of the course, students should be able to:
• Demonstrate proficiency in reading comprehension skills.
• Identify and use language and structural clues as an aid to comprehension in reading materials.
• Demonstrate reading in a variety of materials.

Prereq. RAD 200
1 Credit

REA 050 Reading II

Reading II is designed for students who need to improve their ability to understand and retain the material they read in college. Emphasis is on reading comprehension, language clues, structural clues, critical thinking, and strategic reading.

Upon successful completion of this course, students should be able to:
• Demonstrate proficiency in reading comprehension skills.
• Identify and use language and structural clues as an aid to comprehension in reading materials.
• Demonstrate strategic reading in a variety of materials.

Prereq. REA 030, ESL 045 or pass test
3 Credits 3 Weekly Lecture Hours

REA 100 Critical Reading

Critical Reading addresses both literal and abstract comprehension strategies at a college level. Students will apply contextual reasoning, interpretive processing, figurative analysis and inferential reasoning to a variety of reading materials.

Upon successful completion of this course, students should be able to:
• Differentiate between main idea and supporting details.
• Recognize bias in a variety of materials.
• Discriminate between the facts and opinions.

Prereq. REA 050
3 Credits 3 Weekly Lecture Hours
RTH 100  Respiratory Therapy
Principles I

This course is designed for students majoring in respiratory therapy. This course provides the foundation in science required to apply the principles of respiratory care. The course begins with the study of the physics principles essential to respiratory care. An in-depth study of the anatomy and physiology of the cardiopulmonary system follow this. Finally additional topics related to the practice of respiratory care are presented.

Upon successful completion of this course students should be able to:
• Discuss the principles of physics as related to respiratory care.
• Discuss the cardiopulmonary anatomy and physiology.
• Describe acid-base physiology and compensatory mechanisms.
• Discuss the concepts of team approach and patient-therapist interaction.
• Recall the history and purpose of respiratory therapy.
• Discuss legal and ethical concepts basic to respiratory therapy.
• Communicate using medical terminology.

Prerequisite: CHE 100
Co-requisite: BIS 150, RTH 101
4 Credits
4 Weekly Lecture Hours

RTH 101  Respiratory Therapy
Practicum I

Students are guided and directed by an instructor in the laboratory. This reinforces the principles taught in RTH 100 utilizing the laboratory approach. Assignments applying the principles of physics and chemistry essential to respiratory care will be performed in the simulation lab. Models and computer simulation will be utilized when appropriate.

Upon successful completion of this course students should be able to:
• Apply the principles of physics in the clinical situation.
• Apply principles of pulmonary anatomy and physiology in the clinical situation.
• Apply his/her knowledge of acid-base physiology to the clinical setting.
• Apply principles of team approach and concepts of appropriate patient-therapist interaction to patient care.
• Administer medical gas therapy utilizing the appropriate equipment for the patient’s medical condition.
• Modify medical gas therapy based upon patient response to treatment.
• Ensure the accurate delivery of medical gas concentrations.
• Troubleshoot medical gas delivery devices.

Coreq. RTH 100, BIS 150
4 Credits
12 Weekly Laboratory Hours

RTH 102  Respiratory Therapy
Principles II

This course provides students with the information necessary to safely administer aerosolized respiratory drugs. The student will learn the method of action of the drugs used to treat respiratory diseases and proper dosages and frequency of administration. The student will understand the indications for mechanical ventilation as well as the monitoring of critically ill adult patients requiring ventilatory support. Complications involved in positive pressure ventilation will be reviewed. This course also covers the methods involved in removal of patients from mechanical ventilators.

Upon successful completion of this course, students should be able to:
• The student will have a basic knowledge of how drugs are administered
• The student will be able to explain the mechanism of action for respiratory drugs
• The student will be able to identify the basic functions of mechanical ventilators
• The student will be able to describe how to successfully wean a patient from mechanical ventilation

Prerequisite: RTH 101, BIS 150, Coreq. RTH 103, BIS 151
2 Credits
2 Weekly Lecture Hours

RTH 103  Respiratory Therapy
Practicum II

This course provides students with the knowledge and motor skills necessary to deliver oxygen therapy bronchopulmonary hygiene airway management and ventilator management to the adult patient.

Upon successful completion of this course, students should be able to:
• Recommend respiratory care based on evaluation of a patient’s medical history, physical examination and diagnostic studies.
• Perform cardiopulmonary resuscitation according to the protocol of the American Heart Association.
• Ensure the safety of patients and staff by adhering to infection control standards.
• Deliver bronchopulmonary hygiene therapies and modify according to the patient’s response.
• Perform arterial and puncture.
• Maintain a patent airway.
• Manage ventilation of adult patients in the simulation laboratory.

Prerequisite: RTH 100, RTH 101, BIS 150 Coreq. RTH 102, BIS 151
6 Credits
12 Weekly Laboratory Hours

RTH 104  Respiratory Therapy
Summer Clinical I

This course is a supervised clinical practice.

Upon successful completion of this course, students should be able to:
• Administer bronchopulmonary hygiene and modify therapy based on patient response.
• Analyze and ensure accurate resulting of various types of samples to determine cardiopulmonary function.
• Administer bronchopulmonary hygiene and ventilatory support to critically ill adult patients.
• Assist physicians with special procedure and communicate effectively with physicians.

Prerequisite: RTH 102 and RTH 103
5 Credits

RTH 105  Respiratory Therapy
Summer Clinical II

This course is a supervised clinical practice.

Upon successful completion of this course, students should be able to:
• Administer bronchopulmonary hygiene and modify therapy based on patient response.
• Appreciate the role of anesthesia in the practice of respiratory care.
• Administer bronchopulmonary hygiene and ventilatory support to critically ill adult patients.

Prerequisite: RTH 102 and RTH 103
5 Credits

RTH 200  Respiratory Therapy
Principles III

In this course students will study advanced topics in respiratory care including cardiovascular and renal physiology and the specialties of pulmonary function testing and pediatrics.

Upon successful completion of this course, students should be able to:
• Analyze tests of pulmonary function and modify therapies based upon results.
• Apply the principles of respiratory care, cognizant of the special physiologic and pathophysiologic processes of the neonatal and pediatric patient.
• Describe fundamental principles of normal renal physiology.
• Describe fundamental principles of normal cardiovascular physiology.

Prerequisite: RTH 105 Coreq. RTH 201, RTH 204
3 Credits
3 Weekly Lecture Hours

RTH 201  Respiratory Therapy
Clinical Practicum III

This course is a supervised clinical practice.

Upon successful completion of this course, students should be able to:
• Administer bronchopulmonary hygiene, invasive and non-invasive ventilation and cardiopulmonary resuscitation in the Emergency Room setting.
• Perform pulmonary function testing and analyze results to ensure appropriateness of respiratory care.
• Administer bronchopulmonary hygiene and ventilatory support to critically ill adult patients.
• Assist physicians with patient assessment, special procedure and communicate effectively with physicians.

Prerequisite: RTH 105 Coreq. RTH 200, RTH 204
6 Credits
12 Weekly Laboratory Hours

RTH 202  Respiratory Therapy
Principles IV

This course includes the study of advanced cardiovascular and renal physiology and pathophysiology, and treatment regimens that impact respiratory care.

Upon successful completion of this course, students should be able to:
• Discuss the basic principles of pharmacology, drug administration methods, drug action and side effects with emphasis on respiratory and cardiovascular systems.
• Discuss the principles of fluid and electrolyte balance and how it relates to the respiratory system.
• Describe the principles of cardiac and hemodynamic monitoring.
• Research and present a paper on an area or concept of respiratory therapy in the area of techniques equipment, or respiratory physiology.

Prerequisite: RTH 201 Coreq. RTH 203, RTH 205
3 Credits
3 Weekly Lecture Hours
RTH 203  Respiratory Therapy Practicum IV
This course is a supervised clinical practice.
Upon successful completion of this course, students should be able to:
• Administer bronchopulmonary hygiene and ventilator support to neonatal and pediatric patients.
• Perform respiratory care in the subacute setting.
• Administer bronchopulmonary hygiene and ventilatory support to critically ill adult patients.
• Perform and recommend cardiovascular diagnostic testing as appropriate to respiratory care.
Prereq. RTH 201, RTH 204 Coreq. RTH 202, RTH 205
6 Credits  12 Weekly Laboratory Hours

RTH 204  Pulmonary Pathophysiology Clinical Rounds I
This course is a supervised clinical study of pulmonary pathophysiology.
Upon successful completion of this course, students should be able to:
• Describe the etiology, pathology, functional abnormality, PFT results, pulmonary assessment data, clinical features, treatment and prognosis of the major diseases affecting the respiratory system.
Prereq. RTH 201 2 Credits  4 Weekly Laboratory Hours

RTH 205  Pulmonary Pathophysiology Clinical Rounds II
This course is a supervised clinical study of pulmonary pathophysiology.
Upon successful completion of this course, students should be able to:
• Describe the etiology, pathology, functional abnormality, PFT results, pulmonary assessment data, clinical features, treatment and prognosis of the major diseases affecting the respiratory system.
Prereq. RTH 201, RTH 204 Coreq. RTH 202, RTH 203 2 Credits  4 Weekly Laboratory Hours

RTH 206  Respiratory Therapy Summer Clinical III
This course is a supervised clinical practice.
Upon successful completion of this course, students should be able to:
• Administer and evaluate the results of polysomnographic testing.
• Perform and recommend invasive cardiovascular diagnostic testing as appropriate to respiratory care.
• Administer bronchopulmonary hygiene and ventilatory support to critically ill adult patients.
Prereq. RTH 203, RTH 205 4 Credits

RUS 101  Elementary Russian
Special Studies
This course introduces students to the Russian language by focusing on the development of functional competence in the four skills (listening, speaking, reading, and writing), as well as the expansion of cultural knowledge. Students completing this course will learn about the basic structure of Russian grammar and writing as well as become familiar with elementary conversational skills.

SCI 100  Man & Environment
A study of the design of the natural world and the impact of humans on the environment. It also includes a study of the environmental problems created by our technology. Topics include basic ecology, the population explosion, energy and pollution. Field trips may be included.
This course is an elective designed for non-science majors.
Upon satisfactory completion of this course, students should be able to:
• Analyze the design of the real world.
• Describe the dynamics of the population of different species excluding man in the biosphere.
• Interpret the dynamics of population and future implications if population growth remains unchecked.
• Analyze energy alternatives to meet the demands of technology and growing population on the world’s natural resources.
• Analyze adverse effects of modern societal values and priorities on the biosphere.
• Formulate applications of environmental concepts to one’s interests through integration activities.
Prereq. RTH 105 Coreq. RTH 200, RTH 201 2 Credits  3 Weekly Lecture Hours

SCI 105  Introduction to Nanotechnology
This course will cover the application of nano-technology to electronic, chemical, and biological fields including a review of the basic science concepts. The impact of the commercialization of nanotechnology on society and the environment will be discussed. It is intended primarily for students in any of the various technology programs who will seek employment as laboratory technicians in research and industrial laboratories. Emphasis will be placed on providing a broad overview of the field.
Upon successful completion of this course, students should be able to:
• Demonstrate an understanding of scientific notation and size relationships between nanometers and other metric measures.
• Describe the societal impacts of nanotechnology on modern society.
• List at least five biological applications of nanotechnology.
• Find, using Internet research, five commercial applications of nanotechnology.
• Describe the structures known as nanotubes and bucky balls, and one current application of each form.
• Describe the application of nanotechnology in environmental and medical sensors to electronic monitoring.
• Define key nanotechnology concepts such as “bottom-up”, “self-assembly”, and “molecular recognition”.
Prereq. ENG 100 3 Credits  3 Weekly Lecture Hours

SCI 110  History of Science
This course, designed as a non-science laboratory option for non-science majors or as an open elective for Natural Science majors, traces the philosophical, cultural, intellectual, and technological developments that influenced the evolution of modern science. By examining these developments made over a span of two millennia, students in the course identify the people, places, ideas, and discoveries that led to fundamental shifts in worldviews resulting in changes in the way people obtain knowledge about, investigate, and understand the physical world. Specifically, the course explores the origin and influence of scientific methodologies by tracing the changing role of experimenters, their experiments, and the tools they used. In addition, students document the converging influences that resulted in the Scientific Renaissance and the Scientific Revolution. The course concludes by highlighting important scientific discoveries up to the present day and the continuing struggle between science and long-held misconceptions and beliefs.
Upon successful completion of this course, students should be able to:
• Develop an answer to the question “What is science?”; state the basic assumptions underlying modern science, and discuss the origins of these assumptions.
• Define “scientific paradigm”; describe its influence on the development of science, and outline the factors that result in a change of the scientific paradigm.
• List the characteristics of a scientific methodology.
• Understand the role politics, religion, and commerce played in the history of science.
• Explain the difference between deductive and inductive arguments and their role in the study of the physical world; identify people who employed them, and give examples of each form.
• Describe the approaches and contributions to science of Greek, Islamic, Chinese, Indian, and European thinkers and identify the people and places associated with these approaches and contributions.
• Outline the changing role of experimentation in the history of science, the tools used in the experiments, and describe their influence on the origin of scientific methodology.
• List examples and relate the significance of the people, places, ideas, and discoveries that were part of the Scientific Renaissance.
• Describe the emergence of the Scientific Revolution from the Scientific Renaissance and provide examples of important scientific discoveries over the past three hundred years.
• Identify current areas where scientific research is in conflict with popular beliefs and analyze a selected conflict by examining all arguments put forth in the context of the scientific method and the history of science.
Prereq. REA 050 or Equiv. 3 Weekly Lecture Hours

SOC 100  Human Relations
This course is designed as an introduction to the basic principles of sociology with emphasis on human relationships in community and industrial settings.
Upon successful completion of this course, students should be able to:
• Explain the importance of human relations in the community and occupational spheres.
SOC 110  Introduction to Sociology
The factors that determine social organization, behavior and change are considered in relation to the individual student's own life. Study is concentrated on social interaction, culture, social class, demography, collective behavior, institutions and socialization.

Upon successful completion of this course, the student should be able to:
• Apply the sociological perspective to their own lives.
• Further personal development through knowledge and in the socialization process.
• Describe the impact of the five major social institutions on society and themselves.
• Assess present and possible future effects of social change on their culture's and their own basic values.
• Depict the effects of living in a modern complex society.
• Use the three major sociological theoretical perspectives to analyze a major concept within sociology.
Prereq. ENG 050 and REA 050 or pass test
3 Credits 3 Weekly Lecture Hours

SOC 130  The Elderly and the Criminal Justice System Special Studies
This course is designed to study the agencies, processes and people involved in the criminal justice system as it focuses on problems with the elderly. Legislatures, law enforcement, prosecution, courts, corrections issues are studied with respect to the elderly. Emphasis will be made on the challenges faced by the criminal justice system, when dealing with issues associated with senior citizens. Particular attention will be dedicated to different international approaches to these issues in the study of gerontology.

Upon successful completion of this course, students should be able to:
• Explain the problems faced by the police in dealing with the Elderly as victims and as perpetrators.
• Recognize the various methods of fraud perpetrated against Medicare and Medicaid.
• Discuss the rising rate of elder abuse as it relates to the family, caretakers and nursing homes.
• Understand the impact of the Criminal Justice process on the Elderly as eyewitnesses and Jurors.
• Delineate the problem of sentencing elderly convicted offenders.
• Outline the strategies used to handle elderly prisoners.
• Discuss various international approaches to the relationship of the Elderly to the various criminal justice systems.
Prereq. SOC 110 or SOC 111 or PSY 110
3 Credits 3 Weekly Lecture Hours

SOC 205  Victimization Special Studies
This is a survey course covering contemporary developments in the field of victimology, its conceptual boundaries, its basic concepts and literature, its subfields and role as a field of study within criminology and criminal justice. The historical and emerging roles of victimology as a field are examined and discussed in depth. Special attention is paid to applied learning objectives with respect to each student's personal experiences with human dimensions of victimization. This course also deals with analysis of contemporary programs and trends in the criminal justice system's response to victims.

Upon successful completion of this course, students should be able to:
• To increase familiarity with basic terms, concepts and ideas in victimology.
• To appreciate the historical development of Victimology and its subfields.
• To explore and analyze contemporary problems and trends in victimology.
• To review the functions, operations and management of the criminal justice system.
• Describe the basic components of the Criminal Justice System which pertain to victim assistance.
• Identify the liabilities of individuals who perpetrate criminal acts upon victims.
• Recognize the requirements of various Pennsylvania criminal statutes in protecting victims rights.
• Identify the important role victims playing in vindicating their own rights through victim impact statements.
Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

SOC 207  Sociology of Urban Spaces & Migration Special Studies
This course looks at the way in which urban space is constructed through the movement of people, and its relationship to culture, economics, and politics around the world. Topics include: global cities, immigration, inequality and social segregation.

Upon successful completion of this course, students should be able to:
• Appreciate the different reasons people have for living in cities and how those reasons affect urban life and urban form.
• Be familiar with the histories and geographies of globalized urbanization.
• Understand some of the major similarities and differences among cities particularly 'global' or 'world' cities.
• Be aware of forms of urban inequality both within cities and between them.
• Know the pathways of globalized urbanization in the older industrialized world, the developing world and on the 'margins' of the world economy.
Prereq. ADJ 101 or PSY 110 or SOC 111
3 Credits 3 Weekly Lecture Hours

SOC 180  Sociology of Marriage and The Family
This course explores the various types of paired relationships in American society.

Upon successful completion of this course, students should be able to:
• Describe the American family in terms of the three major sociological theories.
• Explain the concepts concerning who marries whom.
• Explain human reproduction, including prenatal aspects, childbirth, contraceptive techniques and socially transmitted diseases.
• Assess possible future changes, marriage forms and living arrangements as they may affect the American family.
Prereq. ENG 050 and REA 050
3 Credits 3 Weekly Lecture Hours

SOC 210  Cultural Anthropology
The socio-humanistic facts of culture are viewed via a thematic cross-cultural approach. Evolution of community living from band to post-urban and its effects of individual behavior is explored.

Upon successful completion of this course, students should be able to:
• Apply the cultural anthropological perspective to his/her own life.
• Demonstrate usage of the fundamental principles involved in the study of culture to daily living.
• Explain various types of "world views" as found in different cultures.
• Describe the impact of the cultural environment upon the student's personality.
• Assess the effects of cultural change upon the student's own and his/her culture's fundamental values.
Prereq. SOC 110
3 Credits 3 Weekly Lecture Hours

SOC 215  Experiences in Diversity
This course critically examines societal and personal attitudes, values and norms regarding diversity. Topics include: race, ethnicity, gender and sexual preference. We will examine how these factors influence our perception of self and others.

Upon successful completion of the course, students should be able to: Demonstrate critical thinking on issues of race, gender, ethnicity and sexual orientation.
• Describe the impact of minority and majority status as it pertains to economic, psychological and social experience.
• Describe the etiology of racism, sexism, ethnocolonism and homophobia.
• List some of the contradictions of our multicultural society and different strategies toward resolving them.
• Evaluate the positive and negative dimensions of your own cultural experience. Identify personal values that promote understanding and cooperation among human beings.
• Discuss how culture and gender shape our personal identities and behaviors.
Prereq. PSY 140 or SOC 110
3 Credits 3 Weekly Lecture Hours

SOC 219  The Sociology of Race And Immigration Special Studies
In this class we will examine the Eurocentric construction of race, delving into how it became a central organizing principle in North American society. We will also examine the when, why, and the how of immigrant arrival in the USA, paying close attention to the manner in which various group experiences in the U.S.A. were (and are) similar to, and different from, one another. This class will be both historical in nature and present-day oriented. That is, we will examine the when, why, and how of the development of racial categories, ideology, and racism. We will take the time to study the past because without such knowledge we can neither understand nor examine the current system of racial domination. This type of inquiry will help shed light on how historical circumstances continue to impact and shape current racialized identities and disparities today. In this class we will examine various racial and ethnic group experiences within the context of race-based theories. These theories attempt to provide explanations as to why (1) various racial groups were/are treated in specifically different ways (accorded privilege or penalization); (2) some racial groups were/are...
DELAWARE COUNTY COMMUNITY COLLEGE

upon successful completion of the course, students should be able to:

• Describe the major aspects of population growth and migration (both internal and international) and list the consequences of continued growth.
• Describe the major geographical themes as applied to aspects of human culture such as language, music, religion, and social customs.
• Describe the major world agricultural systems.
• Discuss the primary geographical aspects of economic development, the ways in which it varies, and the ways that countries can promote development.

3 Credits 3 Weekly Lecture Hours

SOC 263 Latino-American Political & Social Issues Special Studies

This course provides an overview of contemporary Latino-American political and social issues. It includes an examination of the socio-political structure and organization of the United States, the status and class position of various Latino groups, and a comprehensive demographic profile. Included are such topics as social services, education, gangs and status, poverty and wealth, caste and class, recent migrants and assimilation, as well as the future of Latino-American politics and society.

Upon successful completion of this course, students should be able to:

• Identify and discuss major themes, issues, and events that influence the political and social position of Latinos residing in the United States.
• Describe and contextualize major factors that have changed the political and social standing of Latinos, including education, work, citizenship, heritage, residency, and other factors.
• Explain the experiences of Latinos as residents and citizens in the U.S.
• Describe the contributions made by Latinos to American life.
• Demonstrate the ability to apply course concepts and use appropriate terminology to explain the political and social experiences of Latinos.
• Prepare and present a brief research project on an important political or social issue pertaining to Latinos residing in the United States.

Prereq. ENG 050, REA 050 and HIS 253
3 Credits 3 Weekly Lecture Hours

SPA 101 Elementary Spanish I

The basic principles of pronunciation and grammar of the Spanish language are covered and vocabulary dealing with everyday situations is emphasized. Listening and speaking skills are developed through laboratory practice and increased use of Spanish in the classroom.

Upon successful completion of this course, students should be able to:

• Recognize the essential differences between the Spanish and English pronunciation systems.
• Understand in oral and written form first-level content words and grammatical principles.
• Read aloud in Spanish with due attention to principles of good pronunciation including word stress and intonation patterns.
• Produce appropriate pattern and sentence transformation.
• Write in dictation form with a reasonable degree of accuracy from materials that have been studied.
• Recall familiar facts of Hispanic and Latin American civilizations from reading assignments.
• Fewer than two yrs H.S. Spanish

3 Credits 3 Weekly Lecture Hours

SPA 102 Elementary Spanish II

This course stresses progress in the speaking, writing and reading skills begun in SPA 101 and promotes understanding of Hispanic culture. The mandatory use of laboratory tapes further develops listening and speaking skills.

Upon successful completion of this course, students should be able to:

• Respond in Spanish to a representative number of daily situations.
• Produce with more accuracy the phonetic sounds of the language.
• Read familiar prose aloud in a manner acceptable to the fluent speaker.
• Carry out familiar requests made in Spanish.
• Demonstrate increased command of vocabulary and elements of grammar.
• Briefly express ideas on a given topic.
• Recall familiar facts of Hispanic and Latin American civilizations from reading assignments.

Prereq. SPA 101 or two yrs H.S. Spanish
3 Credits 3 Weekly Lecture Hours

SPA 111 Intermediate Spanish I

Active review of Spanish pronunciation and of fundamental grammatical elements. Study and practice with new concepts of grammar and idiomatic language. Class discussion of selected cultural essays, news articles and/or literary excerpts. Laboratory practice is assigned for improving comprehension of Spanish spoken at normal conversation speed.

Upon successful completion of this course, students should be able to:

• Speak the language in meaningful sentences and appropriate phrases that can be understood by the fluent speaker.
• Respond appropriately to questions on reading selections previously discussed.
• Recall vocabulary, grammatical structures and appropriate correspondence to idiomatic structures in Spanish writings.
• Take dictation from familiar texts.
• Recall important facts and observations taken from selected readings on Hispanic and Latin American civilizations previously studied.

Prereq. SPA 102
3 Credits 3 Weekly Lecture Hours

SPA 112 Intermediate Spanish II

Continued emphasis on active Spanish review of grammatical concepts and instruction in new principles. More attention is given to speaking and understanding the target language through variety of texts including essays and selected masterpieces in poetry and prose. Includes directed and free compositions to enhance writing skills. Laboratory practice is offered for better comprehension of spoken Spanish.

Upon successful completion of this course, students should be able to:

• Demonstrate increasing skill in communicating in Spanish.
• Respond appropriately to questions arising from dialogue, readings and situations previously illustrated.
• Read silently in Spanish, concentrating on the ideas expressed in writing.
• Write complete and meaningful paragraphs and short compositions incorporating newly learned grammatical principles.
• Write in dictation form from familiar texts.
• Recall a significant number of facts or observations derived from selected essays on the Hispanic heritage.

Prereq. SPA 111
3 Credits 3 Weekly Lecture Hours

SPA 201 Advanced Spanish I

Course includes review and expansion of grammar through exercises and activities; progressive emphasis on reading skills with a view to expanding vocabulary and enabling discussions; writing compositions on selected topics. Course is conducted in Spanish.
COURSE DESCRIPTIONS

TCC 111 Technical Communication
This course presents instruction in microcomputer operations using integrated software packages. The principles of communication are stressed to provide students with the appropriate skills and knowledge to effectively manipulate and present information of a technical nature.
Upon successful completion of this course, students should be able to:
• Discuss the dynamics of social context and organizational culture that affects communication within a technical environment.
• Demonstrate appropriate terminology, mechanics, usage and style while communicating technical information.
• Develop computer-integrated graphical documents to prepare technical based correspondence and presentations.
• Create and manage technical information in the form of data, files, records and documents.
• Discuss alternate strategies and methods for structuring an effective oral and written technical presentation.
• Prepare, store, retrieve and integrate technical documents using sources such as electronic bulletin boards and on-line information systems.
• Develop strategies and employ appropriate techniques for communication, in career planning and professional development.
PreReq: ENG 050 or pass test
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TCC 112 CADD Graphics
This course provides students with the concepts and skills necessary to form the basis of object visualization and documentation inherent to the creation and conveying of technical designs and drawings.
Appropriate drafting concepts and skills are developed through use of both free-hand sketching and computer-assisted drafting. Instruction in the use of CADD systems is integrated with graphic theory throughout the course. The course covers theoretical and applied drafting concepts appropriate for conveying graphical representation of objects and designs in a variety of technical environments including manufacturing and construction, as well as architectural, mechanical and civil engineering design.
Upon successful completion of this course, students should be able to:
• Demonstrate the principles governing the setup and layout of technical drawings.
• Discuss the geometric terms and principles used to define, design and represent drawing objects and entities.
• Apply geometric construction techniques and principles of orthographic and pictorial projection for the representation of basic objects.
• Perform basic annotation operations.
• Apply acceptable forms of linework and text in both freehand sketching and CADD.
• Demonstrate the use of basic office equipment, including computer information systems, for creating, managing, plotting and reproducing technical drawings.
3 Credits 3 Weekly Lecture Hours

TCC 121 Project Management Processes
This course is a general survey of time/event and resource management principles. Time management, group dynamics, operations management and project management are covered. Project management can be applied to fields of engineering, architecture, construction, manufacturing, service occupations and others.
Upon successful completion of this course, students should be able to:
• Develop a process based rationale for approaching project management.
• Develop a process for defining project objectives and goals.
• Identify substantive data upon that decisions can be made in the process of managing a project.
• Ascertain the elements and methods essential for process/project management systems.
• Prepare schedule updates and conduct resource capacity analysis.
• Select the method of solution most appropriate for a particular problem.
• Utilize personal computer (PC)-based software programs to compile data, generate documentation, prepare graphical representation, perform analyses and conduct simulations.
• Perform network analyses.
• Make operational decisions in connection with a particular management system.
• Use exercises and case studies for examining project management problems, for developing solutions to problems and for service testing ideas, plans and methods.
PreReq: TCC 111
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TCC 122 2-D CADD
This is a course in computer-aided design and drafting using two-dimensional orthographic projection drawing techniques. Emphasis is placed on sketching/layout techniques for personal-computer-based CADD system operations. A series of increasingly difficult drafting assignments, ending with presentation-quality CADD drawings, will be the major outcome of the course.
Upon successful completion of this course, students should be able to:
• Use appropriate sketching techniques to lay out a drawing, establish drawing parameters, determine setup criteria and represent the conceptual aspects of views for a two-dimensional drawing.
• Use various input devices, display, drawing and plotter commands to sketch the specific requirements for completing drawings for both the mechanical and construction industries.
• Modify and correct redlined orthographic drawings, using Inquiry and Edit commands available in the CADD software.
• Provide annotation, in the form of standardized dimensions, notes, bill of materials, tabulation tables and other text on drawings.
• Develop, structure and manage related drawing files and previously prepared drawings to associate desired information and entities for the creation of a specific set of final drawings.
• Apply basic through intermediate techniques of drafting composition and development for plotting scaled views in various viewport configurations.
• Create two-dimensional engineering charts, graphs and tables.
• Develop and use Coordinate Systems to facilitate drafting of intermediate through advanced drafting views to include orthographic, axonometric and auxiliary planar views.
PreReq: TCC 112
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TCC 228 Design Project Methods
A capstone course applying the principles of design to the completion of a comprehensive individualized (or group) project in a student’s selected field. Emphasis is placed on the decision-making roles and interactions of varied members of the professional design team.
Upon successful completion of this course, students should be able to:
• Identify design-problem parameters by analyzing needs and setting objectives based on conditions of use and performance requirements.
• Discuss the selection of materials for the design solution on the basis of properties, cost and manufacturing or construction processes.
• Produce a preliminary design, sufficient to answer questions of economic feasibility, functional feasibility, and acceptability of character and appearance.
• Plan and apply a service test to the preliminary design, making certain that the solution will meet end-use requirements.
• Discuss specification development for documenting a design solution.
• Create a comprehensive checklist of design procedures or methods.
• Document the design, including detail and assembly drawings, supporting documents and schedules.
• Use computer systems to create a design presentation package.
PreReq: TCC 122 and either TDD 216 or TMC 210
3 Credits 1 Weekly Lecture Hours 4 Weekly Laboratory Hours

(TCS) Construction Technology

TCS 100 Construction Blueprint Reading
This course presents fundamentals in the understanding and use of basic construction drawings to determine methods and materials of light construction. Emphasis is placed on architectural symbols, use of scales, applied geometry and orthographic projection.
Upon successful completion of this course, students should be able to:
• Develop the ability to read and thoroughly understand architectural plans for residential and light-commercial buildings.
• Obtain better understanding of residential and light-commercial construction practices.
• Develop an attitude of critical and orderly thinking in reading technical drawings.
• Understand the various types of reference sources and use them effectively.
• Prepare for advanced studies in architectural construction fields.
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TCS 108 Construction Supervision
Includes the basics of a supervisor’s duties while on a construction project. The supervisor must define objectives that meet with the overall strategy of the organization and achieve results through the efforts of others; constantly evaluate and control production performance and motivate subordinates; a “jack-of-all-trades” under the most adverse circumstances. All too often many skilled craftsmen are thrust into managerial positions without proper training and background and begin to learn by making mistakes in communicating, planning the job, human relations and the effective use of their own valuable, limited time. This course deals, in depth, with the what, why, how, when and where of construction supervision.
Upon successful completion of this course, students should be able to:

- Apply the various techniques employed in motivating subordinates.
- Use communication in leadership and utilize these necessary skills effectively.
- Use scientific techniques in problem solving and apply these to assigned case studies.
- Know what is expected of him/her relative to such items as contract documents; estimate preparation; state, federal and local forms; architectural specifications; building codes, etc.
- Apply construction supervisor’s responsibilities relative to setting up and controlling a job site.

TCS 109 Construction Project Administration

This course provides an introduction to the principles and techniques of construction project administration (CPA). In addition to the tactical decision making involved in site supervision, field personnel are required to contribute to the overall management system for planning and implementing the construction phases of a building project. The CPA system provides the overall contractor organization with an informed decision-making process, which guides the site supervisor in selecting the best means to expedite a job and provides the necessary data flow for accounting functions like billing and payroll. The CPA system also generates project records necessary for organizational processes such as liability management, costing and bidding, and organizational improvement.

This course will have the student to participate in the CPA processes for project planning and scheduling, cost estimating and control, and contract management. Upon successful completion of this course, students should be able to:

- Describe the critical elements of pre-construction operations
- Explain critical inputs to the process for construction planning and scheduling.
- Monitor work progress.
- Diagram the elementary work activities given for the job.
- Track time duration information for activity completion.
- Outline a logical order in which given work items must be done.
- Discuss the elements of a sound job philosophy and the means for implementation.
- Compare variations in type and elements of basic construction contracts.
- Describe standard procedures for quality control in materials and workmanship.
- Describe standard procedures for handling changes, claims and disputes.
- Administer standard documents and procedures for construction project closeout.
- Explain the documents required to recommend/allocate the final phase of payment and waiver of liens.

3 Credits 3 Weekly Lecture Hours

TCS 110 Methods/Materials of Construction I

This is the first course of a two-part introduction to the materials, assemblies and methodologies of general construction organized around Construction Specifications Institute division format. Topics begin with building envelope systems and proceed through finishes, building equipment and basic systems. Emphasis is placed on exploring the impact of design decisions and construction scenario on the final product. Case studies and project simulations are an integral part of the course.

Upon successful completion of this course, students should be able to:

- Identify and discuss building components from the perspective of material source and manufacture.
- Identify and discuss building systems from the perspective of component assemblies and construction methodology.
- Perform critical analysis and problem solving relative to construction project case studies and simulation scenarios.

Prereq. TCS 100

3 Credits 3 Weekly Lecture Hours

TCS 111 Methods/Materials of Construction II

This is the second course of the two-part introduction to the materials, assemblies and methodologies of general construction organized around Construction Specifications Institute division format. Topics begin with building envelope systems and proceed through finishes, building equipment and basic systems. Emphasis is placed on exploring the impact of design decisions and construction scenario on the final product. Case studies and project simulations are an integral part of the course.

Upon successful completion of this course, students should be able to:

- Relate standard construction documentation to the materials and methods of general construction.
- Identify and discuss building components from the perspective of material source and manufacture.
- Identify and discuss building systems from the perspective of component assemblies and construction methodology.
- Perform critical analysis and problem solving relative to construction project case studies and simulation scenarios.

Prereq. TCS 111

3 Credits 3 Weekly Lecture Hours

TCS 120 Estimating I

A method of standard construction estimating procedure from take-off to bid. The course includes excavation, concrete, steel, masonry, carpentry, alteration work, mechanical work, electrical work, and general conditions.

Upon successful completion of this course, students should be able to:

- Demonstrate fundamental estimating skills.
- Interpret construction plans and specifications.
- Develop an estimate to include summaries and costs by category.

Prereq. MAT 110, TCS 100

3 Credits 2 Weekly Lecture Hours

TCS 121 Estimating II

A continuation of Estimating I. This course includes the development of a comprehensive estimate within the time limits and specifications. The course content includes the use of a computer-aided drafter/design system. The importance of standards, documentation and the appropriate use of technical graphics to complement the communication process will be stressed throughout.

Upon successful completion of this course, students should be able to:

- Complete an actual estimate from drawings and specifications within the time limits allowed by the bid documents.
- Obtain experience with the functions performed in a builder’s office.

Prereq. TCS 131

3 Credits 2 Weekly Lecture Hours

TCS 141 Construction First Aid/Safety

Emergency first-aid and accident-prevention instruction for construction employees and managers. OSHA requirements are stressed in this course. Administrative aspects of recordkeeping requirements, rights and responsibilities, standards, safety program development and implementation are covered. Safety training includes identification and elimination of accident and health hazards, inspection techniques and administration of first-aid and CPR.

Upon successful completion of this course, students should be able to:

- Describe the reasoning for accident prevention program development.
- Identify the appropriate administrative requirements, as defined by OSHA, to effect an adequate accident prevention program.
- Develop and implement an accident prevention program.
- Administer first-aid/CPR or seek appropriate medical attention during a construction-related emergency.

3 Credits 3 Weekly Lecture Hours

TCS 221 Construction Survey and Layout

An introduction to the fundamentals of engineering construction and land surveys. Topics include surveying references, accuracy and errors, measurement of horizontal and vertical distances, and the measurement of angles.

Upon successful completion of this course, students should be able to:

- Determine the horizontal location of a point and the direction to a second point utilizing coordinate geometry, azimuths, bearings and offsets.
- Determine the degree of accuracy of a survey and distinguish between types of errors.
- Calculate horizontal distances through the application of correction factors for temperature, tension, slope and tape calibration to field measured distances.
- Determine the vertical location of a series of points with respect to a given datum.
- Determine the difference in elevation between two points.
- Measure accurate horizontal and vertical angles between two points.
- Establish a line at a given angle of intersection with a known line.
- Determine the magnetic bearing of a line.

Prereq. MAT 110, TCS 100

3 Credits 2 Weekly Lecture Hours

(TDD) Drafting/Design Tech

TDD 128 Detailing-Assembly-Fixture Design

Concentrating on the appropriate documentation of the engineering design intent, this course introduces the technician to the concepts, skills and tools for developing formal, precisely constructed detail, assembly, fixture and tooling drawings. Knowledge and application of graphical principles for the creation of mechanical drawings is demonstrated through freehand sketching as well as the use of a computer-aided drafting/design system. The importance of standards, documentation and the appropriate use of technical graphics to compliment the communication process will be stressed throughout.

Upon successful completion of this course, students should be able to:

- Perform mathematical calculations associated with cost estimation, justification, design, build/purchase of parts, fixtures and tooling.
- Contrast various aspects of special, multipurpose and modular fixture/tooling system design.
- Discuss factors related to the determination of material usage, methods of construction and manufacture of...
work holding devices, fixtures and tools. • Utilize software library reference materials and data management techniques to assist in the design/drafting of parts, assemblies, fixtures and tools. • Detail working drawings via standard practices associated with geometric dimensioning and tolerancing. • Develop assembly drawings with associated bill of materials.

Prereq. TCC 122

- Use various display, drawing and plotter parameters
- Apply intermediate to advanced rendering, shading
- Compose axonometric, oblique and perspective view
- End with a presentation quality final project and personal computer-based CADD system to develop a

Prereq. MAT 110, PHY 100 Coreq TME 231, TCC 112

- Solve problems involving cams, gears and gear trains.
- Draw simple mechanisms.
- Design simple mechanisms.
- Should be able to:
  - Determine spatial interference and providing feedback information.

Upon successful completion of this course, students should be able to:
  - Set up and solve basic problems in spatial motion analysis, using both graphical and analytical methods.
  - Design simple mechanisms.
  - Draw simple mechanisms.
  - Set up and solve kinematic problems involving straight-line motion, rotary motion, and combined motion.
  - Solve problems involving cams, gears and gear trains.

Prereq. MAT 110, PHY 100 Coreq TME 231, TCC 112

- Detail working drawings via standard practices
- Utilize software library reference materials and data
- Additionally, activities associated with the evaluation of macro programming and management of electronic files.

Emphasis includes improvement of software function via drafting design (CADD) software customization techniques.

Upon successful completion of this course, students should be able to:
  - Describe user coordinate systems, workplanes and coordinate data, using absolute, relative, polar and spherical coordinates, as well as coordinate filters, to create planar, prismatic and three-dimensional curved features on drawings.
  - Create semi and logarithmic scales and charts, as well as three-dimensional pictorial line and pie charts, bar graphs, scatter plots and surface plots.
  - Construct three-dimensional drawings consisting of wireframe, primitives and solids; and utilize software features to determine the mass properties of a three-dimensional solid models.
  - Utilize descriptive geometry techniques to draft three-dimensional intersections and developments.
  - Compose axonometric, oblique and perspective view drawings.
  - Construct orthographic, isometric and auxiliary view drawings utilizing parametric modeling software.
  - Develop three-dimensional drawings to include assembly drawings using parametric constraint/ modeling techniques.
  - Make sections, profiles and cut away views of three-dimensional objects, including constrained drawings.
  - Apply intermediate to advanced rendering, shading and animation techniques to optimize technical design presentations.
  - Use various display, drawing and plotter parameters and commands to satisfy the specific requirements of a 3D design/drafting assignment.

Prereq. TCC 122

- Write macros to simplify CADD system operations and commands to begin work on the drawing.

Upon successful completion of the course, students should be able to:
  - Identify the components of a typical computer-aided drafting system.
  - Boot up (start) the system in preparation for beginning a new drawing or editing an existing drawing.
  - Identify a drawing, establish drawing parameters and use menus or commands appropriately to begin work on the drawing.
  - Enter pertinent data for the drafting assignment, using absolute and relative coordinates, last coordinates, keyboard and digitizing or pointing devices.

Upon successful completion of this course, students

2 Weekly Lecture Hours
3 Weekly Laboratory Hours

TDD 225 Computer Aided Drafting

An introduction to computer-aided drafting through familiarization with computers and software used, and investigation of the knowledge and skills required of an operator of computer-aided drafting systems. Emphasis is on the IBM microcomputer-based systems, which will be learned through accomplishment of a series of increasingly complex drafting assignments.

Upon successful completion of the course, students should be able to:
  - Identify the components of a typical computer-aided drafting system.
  - Boot up (start) the system in preparation for beginning a new drawing or editing an existing drawing.
  - Identify a drawing, establish drawing parameters and use menus or commands appropriately to begin work on the drawing.
  - Enter pertinent data for the drafting assignment, using absolute and relative coordinates, last coordinates, keyboard and digitizing or pointing devices.

Upon successful completion of this course, students

2 Weekly Lecture Hours
2 Weekly Laboratory Hours

TDD 227 Advanced CADD

This course provides students with computer-aided drafting design (CADD) software customization techniques. Emphasis includes improvement of software function via menu customization, proper installation of the software, macro programming and management of electronic files. Additionally, activities associated with the evaluation of newly evolving CADD related systems provide skills appropriate for identifying specialized design and drafting career opportunities.

Upon successful completion of this course, students should be able to:
  - Use a text editor to create and modify computer software files.
  - Write macros to simplify CADD system operations and maximize speed and accuracy.
  - Structure and edit menus to enhance CADD software module access and performance capabilities.
  - Customize CADD support files such as prototype drawings, line types, hatchets, text fonts, and styles and slide libraries.
  - Create customized CADD Help files, icon and menus.
  - Assemble a career growth portfolio to represent expertise in CADD customization.
  - Develop a methodology for evaluating new computer software and related technologies for computer-aided drafting and design.
  - Utilize object linking and extracting technology to create integrated graphics/textual databases for productivity optimization.

Prereq TCC 122

3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 101 DC Analysis

This course is a core requirement in all Electronics programs. The course covers the basic principles of direct current circuits containing passive elements, including transient circuit analysis. Circuit theory and conversions will also be examined. Troubleshooting of basic resistive circuits with both a theoretical and a hands-on approach will be applied.

Experiments are performed in conjunction with all major topics. Basic electronic testing equipment will be used in conjunction with all lab experiments, including the Digital Multimeter and the Analog Multimeter.

Upon successful completion of this course, students should be able to:
  - Understand and use circuit terminology.
  - Analyze resistive circuits.
  - Follow necessary safety precautions in dealing with electrical equipment.
  - Connect simple circuits following schematic diagrams.
  - Use basic electrical measuring equipment.
  - Produce a readable, informative laboratory report.

4 Credits
3 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 102 AC Analysis

AC (Alternating Current) circuit analysis extends the basic concepts introduced in DC Analysis (TEL 101) to incorporate time-varying voltages and currents. The basic behavior of capacitors and inductors is introduced and series/parallel circuits driven by sinusoidal sources are analyzed using both phasors (vectors/complex numbers) and computer circuit analysis programs. Theoretical concepts are illustrated in the weekly two-hour lab sessions where various test equipment are used to measure experimentally the various characteristics of sinusoidal voltages and currents. Power (real, reactive, apparent) in various AC circuit configurations, including series/parallel resonance, is analyzed.

Upon successful completion of this course, students should be able to:
  - Convert circuit elements from time domain to phasor (complex) representation and back to time domain.
  - Analyze currents and voltages in RL, RC, RLC circuits using phasors.
  - Use a computer software analysis program to obtain various currents and voltages in RL, RC, and RLC circuits.
  - Calculate reactive, apparent and real power in single phase and multiphase circuits.
  - Analyze series and parallel resonant circuits.
  - Analyze transformer circuits.
  - Use various test equipment properly.
  - Produce an accurate and neat laboratory report.

Prereq. TEL 101 and MAT 111

4 Credits
3 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 110 Electronics I

This course utilizes an integrated approach to learning. A topic will be introduced and discussed, developed into a practical circuit, analyzed for faults, and evaluated with a prelab using a commonly accepted software package. The circuits are built, tested and reported in the lab experiments. The course covers basic semiconductor theory, Diode theory, Zener diodes, special use diodes and LEDs. Bipolar transistors to include biasing, D.C. load lines, transistor operation and data sheets are discussed. Power supply circuits and transistor amplifiers are analyzed. Experiments are performed in conjunction with all major topics to reinforce theory. The use of the oscilloscope will be introduced.
Upon successful completion of this course, students should be able to:
• Define the properties, characteristics and applications of semiconductors and diodes.
• Describe and demonstrate the concepts of bipolar transistors.
• Evaluate the different characteristics and properties of transistor amplifier circuits.
• Define the characteristics and application of field effect transistors.
• Describe the properties and demonstrate the concepts of power supplies.

PreReq: TEL 101
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 111 Electronics II

This course covers differential amplifiers, operational amplifier operation, basic OP-AMP circuits, OP-AMP design considerations, components and times as well as audio circuits to include audio amplifiers, power amplifiers and filters. Experiments are performed in conjunction with all major topics to reinforce theory.

Upon successful completion of this course, students should be able to:
• Define the properties, characteristics and applications of operational amplifiers.
• Recognize and describe the operation of basic OP-AMP circuits.
• Describe the OP-AMP design concepts.
• Describe the basic concept of the voltage regulator, voltage references and current reference.
• Describe the concepts of audio circuits.

PreReq: TEL 110
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 121 Digital Electronics

This course is a basic electronics course dealing with digital techniques and circuits. The operation of digital logic gates as well as integrated circuit families used in digital equipment are discussed. Boolean algebra is used to analyze, design and troubleshoot combinational digital circuits. Flip-flops, counters and shift registers are also considered. Practical applications of digital techniques are discussed and implemented in the weekly two-hour lab sessions. Lab design and measurements of the digital circuitry are also verified with computer simulation.

Upon successful completion of this course, students should be able to:
• Discuss the applications and advantages of using digital techniques.
• Implement logic functions using standard digital logic elements.
• Discuss flip-flops, counters and registers.
• Design and troubleshoot elementary digital circuits.

PreReq: TEL 101 Coreq. TEL 110
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 124 Microprocessor I

This course covers basic properties of microprocessor architecture and programming. Technical terms and conventions, program execution and addressing modes, and computer arithmetic and logical operations are covered in detail. Intel's 8085 microprocessor is used to illustrate programming and architecture concepts incorporated in Intel's more advanced microprocessors. Programming exercises are performed on the Hewlett Packard trainer in weekly 2 hour lab sessions.

Upon successful completion of this course, students should be able to:
• Interpret binary, octal, hexadecimal, and ASCII codes and number systems. Define basic microprocessor terminology.
• Describe the operation of a microprocessor.
• Define basic programming terminology.
• Describe the features of the 8085 microprocessor.
• Write assembly programs using proper syntax.
• Use basic flowchart techniques to clarify and troubleshoot program execution. Execute programs and verify results using the Hewlett-Packard microprocessor trainer.

PreReq: TEL 101 Coreq. TEL 121
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 126 Microprocessor II

This course is a continuation of the study of microprocessors. Hardware and software concepts covered in Microprocessors I (TEL 124) are integrated into a study of the interfacing of various I/O devices. Hardware and software experiments are performed using the Hewlett-Packard trainer.

Upon successful completion of this course, students should be able to:
• Describe how to interface to the 8085 MPU.
• Describe and program various programmable devices, such as the 8155, 8255A, 8254 and 8251A.
• Interface D/A and A/D converters to the 8085 MPU.
• Describe serial I/O and data communications.
• Describe the use of interrupts in interfacing with I/O devices.

PreReq: TEL 124
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 128 Computer System Electronics

The fundamentals of various components used in microcomputer systems and their hardware/software support are discussed. Methods of determining system faults at the system, unit, board and component levels are studied. Typical computer/digital systems and test equipment are introduced in the weekly laboratory session.

Upon successful completion of this course, students should be able to:
• Diagnose and troubleshoot hardware and software problems.
• Analyze signal flow at systems level.
• Differentiate between software and hardware problems.
• Construct hardware prototypes.
• Generate software.
• Perform system calibration and testing.
• Interface various computer devices and accessories.

PreReq TEL 126
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 200 Electro/Mechanical Systems

This course examines the behavior of electrical and mechanical components used in interfacing the machine environment to the outside world. The course concentrates on the behavior of input and output devices used to detect, measure and control mechanical, thermal, fluid, optical and electrical processes.

Upon successful completion of this course, students should be able to:
• Analyze the characteristics and behavior of various input devices and transducers.
• Analyze the characteristics and behavior of various output devices.
• Utilize the manufacturers’ service manual for repair and adjustments for pioneer models SX-251R and PD-102
• Demonstrate the ability to repair a stereo receiver
Pioneer Model Sx-251R and a CD player Pioneer Model PD-102.
PreReq. TEL 110

4 Credits
3 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 259 Nanofabrication Manufacturing Seminar
This course gives an overview of typical Nanofabrication applications and provides an introduction to Nanofabrication Manufacturing Technology.
Upon successful completion of this course, students should be able to:
• Understand the typical application of Nanofabrication Manufacturing and obtain an overview of the industry.
• In order to demonstrate this competency, the student should be able to:
  • Describe the various types of businesses in the nanotechnology field.
  • Explain the application of the nano field.
  • Outline the career opportunities available in this field.
PreReq. TEL 101
1 Credit
2 Weekly Lecture Hours

TEL 260 Materials, Safety, Health Issues and Equipment Special Studies
This course provides an overview of basic nanofabrication processing equipment and material chemistry and handling procedures. The focus is on cleanroom protocol, safety, environmental and health issues in equipment operation and materials handling. Safety and health issues will be covered for the following topics: cleanroom operation; vacuum pump systems operation; furnace operation; chemical vapor deposition system operation; and vacuum deposition/etching system operation. Specific materials handling issues will include deionization water, solvents, cleaners, ion implantation sources, diffusion sources, photoresists, developers, metals, dielectrics, and toxic, flammable, corrosive, and high purity gases as well as packaging materials.
Upon successful completion of this course, students should be able to:
• Identify the basic nanofabrication processing equipment.
• Describe the uses and applications of the basic nanofabrication processing equipment.
• Identify safety hazards associated with nanofabrication.
• Explain the fundamentals of vacuum technology including pumps, components, and metrology.
• Identify materials used in nanofabrication manufacturing.
• Operate material metrology equipment.
• Associate the material handling issues with each identified nanofabrication material.
• Explain basic chemical properties of materials.
• Summarize basic cleanroom operation and protocol.
• Demonstrate an understanding of basic cleanroom operation and protocol.
PreReq. TEL 111, TEL 121, TEL 210, MAT 210, ENG 112
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 261 Basic Nanofabrication Process
This course provides an overview of basic processing steps in Nanofabrication (contact lithography, basic etching and deposition techniques). The majority of the course details a step-by-step description of the equipment and processes needed to fabricate devices and structures. Processing flow will be examined for structures such as microelectronic devices including diode and the MOS capacitor. Students receive an in depth introduction to basic lithography from wafer preparation to final inspection. Contamination issues in nanofabrication are discussed in detail. Students will learn the similarities and differences in both equipment and process flows for each configuration by undertaking “hands-on” processing.
Upon successful completion of the course, students should be able to:
• Perform basic lithography processes.
• Operate contact lithography equipment.
• Operate optical microscopes and imaging software.
• Operate metrology equipment.
• Explain electrical characterization equipment.
• Describe the basic steps in p-n junction diode process flow.
• Identify the equipment in p-n junction diode process flow.
• Explain the complete p-n diode manufacturing process in a class 10 cleanroom.
• Describe the basic steps in a MOS capacitor process flow.
• Identify the equipment in a MOS capacitor process flow.
• Compare the similarities and differences in equipment and process flow for the process flows listed above.
Coreq. TEL 260
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 262 Thin Film in Nanofabrication
This course covers advanced thin film deposition and etching practices in nanofabrication. Advanced deposition techniques covered in the first part of the course include atmosphere, low-pressure and plasma enhanced chemical vapor deposition, sputtering, thermal and electron beam evaporation. The study of materials includes dielectrics, polysilicon and metals. The second part of the course focuses on advanced etching practices and techniques emphasizing reactive ion etching, high-density plasma systems, ion beam etching, and wet chemical etching. Students will receive hands-on experience in depositing and etching dielectric, semiconductor, and metallic materials using state-of-the-art tools and practicing many of the steps critical to nanofabrication of semiconductor devices including microelectronics, MEMs devices, display structures and structures used in the biotechnology fields.
Upon successful completion of this course, students should be able to:
• Explain all chemical vapor deposition (CVD) processes used in nanofabrication.
• Explain the operation of CVD equipment.
• Describe the uses of different CVD thin films in nanofabrication.
• Explain all physical vapor deposition (PVD) processes used in nanofabrication.
• Set up and operate equipment to perform PVD.
• Describe the uses of different PVD thin films in nanofabrication.
• Explain the processes in wet chemical etching techniques.
• Set up and operate equipment to perform wet chemical etching.
• Describe the uses of wet chemical etching techniques.
• Explain the processes in plasma etching techniques used in nanofabrication.
• Set up and operate equipment to perform plasma etching.
• Describe the uses of plasma etching techniques.
• Operate a scanning electron microscope for materials characterization.
PreReq. TEL 261
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 263 Lithography for Nanofabrication
This course covers all aspects of advanced lithography from design and mask fabrication to pattern transfer and inspection. The course is divided into three major sections. The first section describes the advanced lithographic process from substrate preparation to exposure. Most of the emphasis is on understanding the nature and behavior of photoresist materials. The second section examines systems and techniques that define patterns. This section will introduce specialized optical masks and reticles, aligners, steppers and scanners. In addition, critical dimension (CD) control and profile control of photoresist will be investigated. The last section will discuss advanced optical lithographic techniques such as phase shifting masks and illumination schemes as well as e-beam, e-ray, EUV, and ion beam lithography. A section about engineering dielectrics is also discussed.
Upon successful completion of this course, students should be able to:
• Explain the process steps necessary to produce a photolithographic pattern in positive, negative and chemically amplified resists.
• Describe the nature and behavior of photoactive materials such as BCB.
• Describe all lithographic techniques in nanofabrication.
• Explain mask layout and fabrication for photolithography.
• Describe and perform alignment and registration in photolithography.
• Identify the equipment used in photolithography.
• Set up and operate equipment used in photolithography. Modify profiles in photoreist for lift-off applications.
Coreq. TEL 262
3 Credits
3 Weekly Lecture Hours

TEL 264 Materials Modification in Nanofabrication
This course will cover in detail the processing steps used in modifying material properties in nanofabrication. An intensive study of metals used in nanotechnology aids the student in understanding the various methods of metalization such as CVD, evaporation, and sputtering. Metal applications for interconnect technologies will be examined. Aluminum, refractory metals and copper deposition techniques and characterization will be discussed in detail along with topics such as diffusion barriers, contact resistance, electromigration, corrosion, stress effects, and adhesion. Other modification technologies such as ion implantation, diffusion and surface preparation and treatment are integrated as well. An intensive study of dielectric properties and materials including dielectric constant engineering, mechanical, optical and electrical characteristics, poly, BSG, PSG, SOG, and BPBS gives the student further insight into advanced device fabrication. Material properties and basic device structures will be discussed for the optoelectronic market.
Upon successful completion of this course, students should be able to:
• Contrast thermally grown oxides with spin on dielectrics.
• Identify the processing equipment for slicing, etching and polishing.
• Describe the procedures for slicing, etching, polishing, and epitaxial growth.
• Perform advanced fabrication techniques.
• Determine the processing parameters of dielectric materials.
• Explain the concept of engineering dielectric constants for different nanofabrication applications.
• Explain metalization techniques and processing equipment.
• Select appropriate materials to match the design needs of nanofabricated devices.
• Describe the process of direct bandgap photonic emission.
• Examine common materials and properties for the optoelectronic market.
• Describe the need for optoelectronic devices.
PreReq. TEL 263 Correq. TEL 265
3 Credits
2 Weekly Lecture Hours
2 Weekly Laboratory Hours
TEL 265 Characterization, Packaging and Testing of Nanofabrication Structures
This course examines a variety of techniques and measurements essential for controlling device fabrication and final packaging. Students will revisit concepts such as residual gas analysis introduced in TEL 261, optical emission spectroscopy (OES) and end point detection as introduced in TEL 263. Characterization techniques such as surface profilometry, advanced optical microscopy, optical thin film measurements, ellipsometry, and resistivity/conductivity measurement will be implemented on nanofabricated samples. Basic electrical measurements on device structures for yield analysis and process control will also be stressed. These will include breakdown measurements, junction testing, and C-V and I-V tests and simple transistor characterization. In addition, students will examine mechanical as well as electrical characterizations of nanoscale structures for biological/biomedical applications. The students will perform DNA analysis by learning and performing the polymerase chain reaction for DNA replication. They will also study and manufacture microfluidic channels for biological analysis. An extensive overview of biology will be given with emphasis on biocompatible materials. The students will also learn about the manufacturing issues involved in subjects such as interconnects, isolation, and final device assembly. The importance of planarization techniques such as deposition/etchback and chemical/mechanical polishing will be emphasized. Finally, packaging procedures such as die separation, inspection bonding, sealing and final test for both conventional IC's and novel MEM and biomedical devices will be examined.

Upon successful completion of this course, students should be able to:
- Describe various process monitoring techniques used in nanofabrication.
- Design a process flow for a NMOS transistor from wafer preparation to packaging.
- Present the NMOS transistor output in a power point format, with emphasis on process interrelationships.
- Describe various material characterization techniques used in nanofabrication.
- Use the C-V and I-V testing techniques utilizing devices made using the process flows of TEL 262.
- Identify the equipment employed for final assembly.
- Explain the processes of final assembly.
- Describe the importance of nanofabricated biocompatible materials.
- Replicate and quantify DNA fragments utilizing the polymerase chain reaction and gel electrophoresis.
- Describe the issues associated with metalization and planarization.
- Identify the equipment associated with metalization and planarization.
- Operate equipment for metalization.
- Describe the test procedures associated with packaging.
- Describe the issues associated with packaging.
- Identify the equipment associated with packaging.

Prereq. TEL 263 Coreq. TEL 264
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 302 Radio Frequency Communication Systems
RF communications, noise and special communication circuits are introduced first. Various modulation techniques are then discussed in detail. Discussion of radio receivers and transmitters, wave propagation, antennas and transmission lines forms an integral part of this course. Upon successful completion of this course, the students should be able to:
- Define the basic communications system. Demonstrate a fundamental knowledge of electromagnetic waves. Understand a variety of transmission lines and their characteristics. Define the properties, characteristics and applications of antennas. Distinguish the difference between time and frequency domain. Define the concept of noise and how noise affects communications systems. Evaluate the properties of components that make up communications systems. Describe the properties and demonstrate the concepts and applications of phase-locked loops and synthesizers in communications systems. Define the properties, characteristics and applications of amplitude modulation. Define the properties and characteristics of frequency modulation. Discuss the advantages of using single sideband transmission.

Prereq. TEL 301
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

TEL 303 Digital and Data Communications
This course provides a clear and comprehensive introduction into what makes up a data communications system. Topics such as LANS, Packet Switching and ISDN are introduced. Upon successful completion of this course, students should be able to:
- Define the properties and the characteristics of various types of carriers and services.
- Distinguish the difference between various code sets.
- Define the characteristics of synchronous and asynchronous transmission.
- Discuss modems and interface. Describe system networks and architectures.

Prereq. TEL 301
4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

(TME) Mechanical Technology

TME 110 Materials Science
This course introduces students to the structure, properties, use and design considerations of a variety of materials including ferrous metal, non-ferrous metals, ceramics and polymers.

Upon successful completion of this course, students should be able to:
- Determine the structure of materials.
- Select the proper material(s) according to their properties and use.
- Determine the properties and use of polymeric materials, plastics, polymeric coatings and adhesives.
- Determine the properties and use of metallic materials, plastics, polymeric coatings and adhesives.
- Determine the heat-treatment sequence of steel.
- Determine the properties and use of stainless steel, copper, aluminum, nickel, zinc, titanium, magnesium and refractory metals.

Prereq. TCC 112 and MAT 110
3 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TME 115 Basic Technical Skills
This course develops hands-on skills essential to the technician. Basic technical skills are developed by the following a project from design to completion and testing.

Upon successful completion of this course, students should be able to:
- Apply basic accident-prevention practices and procedures.
- Interpret sketches, drawings and schematics.
- Use rules, micrometers, vernier calipers, dial indicators and other instruments to make accurate measurements.
- Perform basic electronic measurements.
- Employ basic hand-soldering/desoldering techniques for electronic component installation.
• Present technical information concisely and accurately.
• Demonstrate career-planning/job-seeking skills.
• Enter and execute a basic program on a personal computer or calculator.

3 Credits 1 Weekly Lecture Hours 4 Weekly Laboratory Hours

TME 210  CNC Operations
This course provides an introduction to the operation and manual programming of Computerized Numerically Controlled (CNC) machine tools including fundamental concepts, terminology and applications. The capabilities, advantages and disadvantages of numerically controlled equipment will be covered. Mathematical applications for definition of location, set-up, positioning and movement within specific coordinate systems will be presented. Various aspects of manual programming (G and M codes) and computerized conversational graphics modeling will be included. Criteria and practices basic to effective preventative maintenance, accident prevention practices and procedures, process planning, tooling, machine set-up and operation (dry-run, first and production runs) will be addressed also.

Upon successful completion of this course, students should be able to:
• Develop an appreciation for the aspects of Numerical Control (NC) and for production enhancement capabilities of Computerized Numerically Controlled (CNC) machine tools.
• Via manual methods, interpret and convert basic part drawings to procedural manufacturing process/operation, tooling and job plans for a CNC mill or a CNC lathe.
• Apply principles of mathematics, engineering piece-part print interpretation and geometric analysis techniques to describe a manufactured part’s datum points and planes, surfaces and feature locations in terms of two dimensional, interpolated machine axes and tooling positions.
• Utilize the concepts and techniques of manual programming to prepare and proof a written manuscript for the production of a manufactured part on a CNC mill and a CNC lathe.
• Demonstrate the ability to use concepts, techniques, hardware, software menus and computer system practices associated with a Computer Aided Machining/Distributed Numerical Control (DNC) system to write, save, retrieve and transfer CNC machine tool programs.
• Conduct CNC mill and lathe set-up, dry run, first run, inspection and adjustment techniques, and production run procedures and practices.

Prereq. TME 111 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TME 216  Statics and Strength of Material
This course provides students with a foundation in the general procedures and principles of the mechanical design process. Students solve force systems select components and determine resultants in equilibrium. Strength failures of various materials will also be studied in detail.

Upon successful completion of this course, students should be able to:
• Analyze and solve problems involving force systems, components, resultants and equilibrium.
• Determine center of gravity and centroids of members and objects.
• Identify moment of inertia of objects.
• Analyze simple structures under linear stress and strain.
• Investigate the effects of torsion on shafts and springs.
• Find the load, stress and deflection on beams.
• Analyze structures subjected to combined loading.

Prereq. MAT 111 and PHY 110 4 Credits 3 Weekly Lecture Hours 2 Weekly Laboratory Hours

TME 221  Manufacturing Processes II
A continuation of Manufacturing Processes I. This course includes practical experience in machine operations. Hot-working manufacturing processes including laboratory production of simple molds, cores, castings and weldments are introduced.

Upon successful completion of this course, students should be able to:
• Describe principles of the major manufacturing processes and operations.
• Determine a plan for the layout, operation and quality check of chip-cleaning (cutting), forging and melting (hot) manufacturing processes.
• Produce a plan, layout and quality check of products by manufacturing processes.
• Form a product by casting.
• Form a product by forging.
• Perform basic heat-treating operations.
• Fabricate a product by welding.

Prereq. TME 121 2 Credits 2 Weekly Lecture Hours 2 Weekly Laboratory Hours

TME 222  Advanced Computer Aided Machining
This course provides introductory instruction on advanced piece-part modeling techniques of Computer-Aided Drafting/Design—Computer Aided Machining (CADD-CAM). A broad based instructional approach provides concepts necessary to applying process modeling techniques for both advanced milling and turning. Three dimensional (combined surface types) geometry and associated tool path coding on multiple work and tool planes will be covered. Advanced solutions for completing four-axis simultaneous turning and integrated mill/turn (C-Axis) and ‘live’ tooling operations for modern lathes will be included also. Process modeling software packages for advanced three-dimensional machining and advanced turning will be used in instruction for this course.

Upon successful completion of this course, students should be able to:
• Describe the basic concepts and performance requirements for effecting translation and manipulation of Computer-Aided Drafting/Design to Computer-Aided Machining (CADD-CAM) data for Computer Numerically Controlled (CNC) program creation.
• Complete advanced work and tool plane definition, and manipulate software functions to perform operational activities involving same.
• Conduct four- and five-axis position and rotary axis modeling as well as CNC code generation.
• Identify, create and perform operations on surface primitives and developed 3D composite wireframe and surface geometry models.
• Create job plans and 3D surface geometry tool path and associated CNC machine tool code for piece-part production.
• Plan, create and program synchronized four-axis operations.
TME 229  Fluid Power and Controls
This course provides a study of the basic principles of industrial fluid mechanics hydraulics and pneumatics. Types of fluid, their condition and use in transmitting power throughout various circuits are addressed. Pumps and compressors, conduits, circuit components, application and control are also topics of coverage. Characteristics such as flow, pressure/ vacuum, force, temperature, torque, speed, horsepower, efficiency, fluid and system conditioning, as well as component and circuit performance will be addressed. System design, component specifications and selection, will be examined also. Pilot and electro-mechanical control system features will be discussed and investigated. Instructional emphasis is placed on the relevant theoretical and practical aspects of the subject.
Upon successful completion of this course, students should be able to:
• Cite basic maintenance and accident prevention practices and procedures for fluid power and control system service and operation.
• Identify criteria and methods used to specify components, as well as commonly used fluids for pneumatic and hydraulic systems.
• Identify, classify and specify hydraulic and pneumatic prime movers, compressor/pumps, valves, conduitors, filters and strainers.
• Determine cylinder load, speed, volume, pressure/ vacuum, flow rate, and horsepower requirements.
• Size fluid conductors, receivers, reservoirs and accumulators based on fluid pressure, flow rates and volumetric requirements.
• Recognize standard graphic symbols for common pneumatic and hydraulic components.
• Lay out and sketch simple circuits using standard graphic symbols.
• Construct, demonstrate and investigate the use of various control devices, circuits and systems including pilot and electro/mechanical controls.

TME 231  Technical Mechanics
This course provides students with the concepts and skills required to apply the principles of mechanics for the solution of problems commonly encountered in the fields of drafting and design mechanical and automated manufacturing and robotics technologies.
Upon successful completion of this course, students should be able to:
• Review force systems using free bodies in equilibrium.
• Solve friction problems for wedge, belt, rolling and bearing systems.
• Review the center of gravity and moment of inertia for distributed area and mass systems.
• Describe motion of a particle or rigid body.
• Determine the effect of forces on moving bodies.
• Analyze simple systems subjected to impulse and momentum.
• Calculate work, energy and power during mechanical operations.

TME 232  Robotic Systems
Offered as a continuation of Robotics and Programmable Logic Controllers (TME 220) this course provides instruction in robotic work-cell development and applications. This course focuses on the application of robots and manufacturing automation systems. Cell layout, documentation, programming and the integration of sensory feedback systems to monitor a control process within a manipulative and transporting system are stressed.
Upon successful completion of this course, students should be able to:
• Analyze the processes and operations involved and prepare a plan for the layout and integration of various components within a robotic work cell.
• Read and create drawings, circuits and logic diagrams applicable to installing, interfacing, programming and repairing automated systems.
• Describe the basic function of a sensory monitoring/feedback system and discuss the concepts involved for accomplishing system interfacing, and system control.
• Perform off-line programming functions for Robotic and Programmable Logic Controllers (PLC) devices.
• Monitor the performance of a PLC microprocessor/computer automated system.
• Interact with supervisory personnel and assist with the installation of a programmable automated system.

WLD 100  Introduction to Welding
Classroom instruction includes the proper selection of A.C and D.C. power sources and their applications. Oxy-fuel welding and cutting equipment and safety procedures are covered. Also discussed is proper set-up, use of GMAW and GTAW power sources and how to correctly set up and use them. All requirements and safety procedures are covered.
Upon successful completion of this course, students should be able to:
• State the power sources associated with welding and their application.
• Select the correct welding equipment for the job.
• Set up and use oxy-fuel welding and cutting equipment.
• Follow safety requirements and regulations.

WLD 101  Introduction to Oxy-Fuel Welding and Cutting
Course emphasis is on fuel gases, welding and cutting equipment.
Upon successful completion of this course, students should be able to:
• List the major advantages and disadvantages of different fuel gases.
• Maintain an oxy-fuel welding set.
• Demonstrate lighting, adjusting, and extinguishing an oxy-fuel flame.
• Use an oxy-fuel cutting torch.

WLD 102  Oxy-Fuel Welding
This course provides instruction in welding of mild steel. Emphasis is placed on showing correct torch size and angle welding rod size, flame effects on metal, characteristics of the weld, welding in different positions.
Upon successful completion of this course, the student should be able to:
• Utilize correct method of welding mild steel.
• Cite the effects of flame on metal.
• Demonstrate ability to weld a variety of joints in any position.

WLD 103  Shielded Metal Arc Welding I
This course covers the principles of electric arc welding using electrodes 6010, 6011, 6012, 6013 in the flat position, correct angles and methods.
Upon successful completion of this course, students should be able to:
• Set correct amperage for welding.
• Explain and calculate effects of changing arc length, angle and travel speed on a weld.
• Weld in the flat position.
• Demonstrate ability to control undercut, overlap, porosity, and slag inclusion when welding.

WLD 104  Shielded Metal Arc Welding II
This course covers effects of current settings, arc lengths, electrode angles and electrode manipulation on the quality of weld joint. Welding in horizontal, vertical and overhead positions is taught.
Upon successful completion of this course, students should be able to:
• State the effects of current settings on the weld.
• Control electrodes in the correct manner.
• Weld in vertical, overhead, and horizontal positions using 6010 and 6011, 6012 and 6013 electrodes.

WLD 105  Intermediate Shielded Metal Arc Welding I
Theories that were covered in the two shielded welding courses are applied and demonstrated in this course. Various joint designs are emphasized for the various positions using such electrodes as 7018 and 8018.
Upon successful completion of this course, the student should be able to:
• Detail various joint designs.
• Identify joint designs.
• Weld joints from designs.
• Weld in various positions using E7018 and EB018 electrodes.

WLD 106  Intermediate Shielded Metal Arc Welding II
This course continues the theory covered in Intermediate SMAW 1. Welding of lap and tee joints in both flat and horizontal positions using 6010 and 6011 are done. Introduction to A.W.S., A.S.M.E., A.S.T.M. and A.R.I. codes are also included.
Upon successful completion of this course, students should be able to:
• Prepare, set up and design tee joints for welding.
• Demonstrate procedures for fillet welds in the flat and horizontal positions.
• Create E6010 and E6011 fillet welds in flat and horizontal positions.

PreReq. WLD 105
2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 150  Welding Design

This course emphasizes the use of basic drafting skills for layout of plate sheet metal, and patterns and the selection of welding processes and joint design. Students will calculate and estimate weldment and weld metal, and will learn how to allow for distortion and the use of jigs, fixtures and positioners.

Upon successful completion of this course, students should be able to:
• Calculate material costs.
• Use fixtures and jigs for design purposes.

PreReq. WLD 202
2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 151  Testing and Inspection of Welds

This course introduces the principles and applications of non destructive testing using liquid penetrant, magnetic particles, and ultrasonic and radiographic testing methods. Emphasis is placed on non-destructive procedures and interpretation of code specifications and standards.

Upon successful completion of this course, students should be able to:
• Cite the principles of non-destructive testing.
• Explain the use of liquid penetrant, mag positive and ultrasonic and radiographic testing.
• Work with welding and safety codes and standards.

PreReq. WLD 202
2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 152  Welding Codes and Specifications

This course covers welding codes and their applications.

Upon successful completion of this course, the student should be able to:
• Explain welding codes and their use.
• Use welding specifications.
• Apply proper use of A.P.I., A.W.S., and A.M.E. codes.
• Describe, in basic terms, the various considerations associated with special purpose machines, processes, mass production, hard and soft automation, and assembly techniques.

2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 153  Soldering, Brazing and Brace Welding

This course discusses the advantages of soldering and brazing. Soldering and brazing methods including building up surfaces filling holes filler metals and fluxes are covered.

Upon successful completion of this course students should be able to:
• Explain the use of soldering and brazing.
• Use methods involved in soldering and brazing.
• Demonstrate basic soldering and brazing of varied joint designs.

2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 200  Gas Metal Arc I

This course covers GMAW equipment set-up and operation. The theory of gas metal arc welding is applied to mild steel and plate steel in all positions. Students are introduced to single and multi phase welds using a variety of electrode (wire) diameters.

Upon successful completion of this course, students should be able to:
• Explain GMAW as applied to nonferrous metals.
• Demonstrate different modes of metal transfer.
• Practice welding sheet and plate steel in all positions.

2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 201  Gas Metal Arc II

This course covers the application of gas metal arc welding theory to non-ferrous materials and their alloys. Different modes of metal transfer are addressed.

Upon successful completion of this course, students should be able to:
• Show proper GMAW equipment set-up.
• Demonstrate threading GMAW wire.
• State how to set appropriate gas flow rate and current.
• Describe the various methods of metal transfer.
• Explain the effect of slope and inductance in gas metal arc welding.
• Perform welds in all positions using the short-circuiting metal transfer method.
• Weld in the IF, 2F and IG positions using the globular metal transfer method.
• Perform welds in the IF and IG positions using the axial spray metal transfer method.

2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 202  Advanced Shielded Arc I

The advanced shielded metal arc course continues the theory covered in Shielded Metal Arc Welding II. A variety of electrodes are discussed. The American Welding Society (A.W.S.) numbering system is emphasized. Specifications of A.S.M.E., A.S.T.M. and A.P.I. codes are covered. Students learn mild steel with E6010 in all positions. Students will learn A.W.S. welding symbols and how they are used.

Upon successful completion of this course, students should be able to:
• Depict the variety of electrodes in SMAW and their uses.
• Explain the A.W.S. numbering system.
• Weld with E6010 on heavy plate in all positions.

PreReq. WLD 106
2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 203  Advanced Shielded Arc II


Upon successful completion of the course, students should be able to:
• Weld in all positions using a variety of electrodes.
• Interpret welding blueprints.
• Perform non-destructive testing procedures.

PreReq. WLD 202
2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 204  Gas Tungsten Arc I

This course emphasizes the set up and operation of the GTAW process. Various types of tungsten electrodes are covered, along with tolerances and color codes. Welding machines and polar lines that are commonly used are discussed.

Upon successful completion of this course, students should be able to:
• Differentiate GTAW welding equipment.
• Set up and operate GTAW equipment for welding.
• List the types of tungsten and their uses.
• Depict the different torches used in GTAW.
• Explain the polarities used in GTAW processes.

PreReq. WLD 203
2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours

WLD 205  Gas Tungsten Arc II

Gas tungsten arc welding is covered in various positions, using ferrous and non-ferrous sheet and plate. Different welding gases are also used with GTAW processes.

Upon successful completion of this course, students should be able to:
• Perform gas tungsten arc weld in various positions.
• Use different welding gases in the GTAW process.
• Demonstrate gas tungsten arc weld on ferrous and non-ferrous metals.

PreReq. WLD 204
2 Credits 1 Weekly Lecture Hours
2 Weekly Laboratory Hours
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Agar, John R., Jr., Dean, Mathematics, Science and Engineering; B.A., Rutgers, the State University of New Jersey; M.S., M.S. in Ed., University of Pennsylvania; Ed.D., Temple University

Albrecht, Rebekah S., Assistant Professor; A.B., Marywood University; M.A., West Chester University

Allison, Jean C., Assistant Professor; B.S., West Chester University; M.Ed., Widener University

Alvord, Amberlynn, Online Learning Support Specialist II; A.A., Delaware County Community College; B.A., Immaculata University

Amand, Judith Keller, Professor; B.A., M.S., University of Pennsylvania

Anderson, Gwendolyn S., Professor; B.S., M.S.Ed., Ed.D., Temple University

Aquilani, Steven M., Associate Professor; B.S., Indiana University of Pennsylvania; M.S., Ball State University; Ph.D., University of Mississippi

Arnold, Leon E., Professor; B.S., Dickinson College; M.A., Villanova University

Aronovitz, Reuben R., Professor Emeritus, Engineering

Arrington, Larry G., Jr., Assistant Dean, Math, Science and Engineering; B.S., Drexel University; M.Ed., Eastern University

Artman, Glenn L., Professor; B.S., The Pennsylvania State University; M.A., Villanova University

Ataifar, Aliakbar, Professor; B.A., International Iranzamin College; M.B.A., Northrop University; M.A., New School University

Baker, Chuck A., Assistant Professor; B.A., Cheyney University; M.A., Temple University

Baldwin-Hench, Janice, Professor; B.A., Randolph-Macon Woman's College; M.A., Villanova University

Barnes, Lisa A., Professor; B.A., Lafayette College; M.A., University of Newcastle, Australia; Ph.D., University of Pennsylvania

Barnes, Patricia J., Associate Professor; A.B., University of Illinois; M.A., University of Chicago

Baun, Jeffrey S., Associate Vice President for Administration and Facilities Planning; B.S., M.B.A., The Pennsylvania State University

Belal, Nafees H., Assistant Professor; B.S., The University of Oklahoma; M.S., The University of Delaware

Belcastro, Richard T., Assistant Professor; B.A., University of California; M.F.A., Brandeis University

Bellini, Francesco, Assistant Professor; B.A., Boston University; M.A., New York University; Ph.D., California Institute of Integral Studies

Bender, Wayne K., Online Learning Support Specialist I; A.A., Delaware County Community College

Benfer, Doris K., Professor Emerita, Biology

Bennett, Robert C., Professor; B.A., St. Bernard's College; M.B.A., Saint Joseph’s University; C.H.A., American Hotel Association

Biebel-Stanley, Elizabeth, Associate Professor; B.A., University of Pittsburgh; M.A., Villanova University; Ph.D., Lehigh University

Binder, Ann S., Director, Special Needs Services; B.A., University of Virginia; M.Ed., West Chester University

Bohm, Adriana Leela, Assistant Professor; B.A., University of Delaware; M.A., University of Maryland; Ph.D., Temple University

Bond, Susan E., Director, Workforce Entry Center; B.A., The Pennsylvania State University; M.A., Drexel University

Bowers, Joanne E., Assistant Professor (Counselor), Career and Counseling Center; B.S., Gwynedd-Mercy College; M.A., Villanova University; M.S.S., Bryn Mawr College, School of Social Work and Social Research

Boyer, Mary Jo, Vice Provost and Vice President, Chester County Operations; B.S., Villanova University; M.S., University of Delaware; Ph.D., Widener University

Boyle, Michele, Assistant Professor (Counselor), Career and Counseling Center; B.A., Temple University; M.S., West Chester University

Brar, Gurcharan, Professor; B.S.C.E., University of Rochester; Ph.D., Banaras Hindu University

Brats, Dean C.T., Professor Emeritus, Biology

Breslin, Kathleen A., Vice President, Institutional Advancement; Executive Director, DCCC Educational Foundation; B.A., Villanova University

Brown, Betty M., Associate Dean for Student Success; B.S., Ursinus College; M.S., Villanova University

Brunton, Elizabeth A., Financial Aid Advisor, Chester County Operations; B.A., Arcadia University; M.Div., Lutheran Theological Seminary

Bullock, Shannon D., Assistant Professor; B.S., M.A., Appalachian State University

Burkhalter, Shelley, Assistant Professor; B.A., M.A., Texas Tech University

Burns, Linda R., Professor; B.S.N., Case Western Reserve University; M.S.N., University of Colorado

Cahill, Kevin J., Assistant Professor; B.A., Bloomsburg University; M.A., Villanova University; Ph.D., West Virginia University

Callahan, Arlene M., Payroll Accountant; A.A., Harcum Junior College; A.S., Delaware County Community College; B.A., The Pennsylvania State University; M.S.M., Rosemont College

Campbell, Ruth, Professor (Counselor), Career and Counseling Center; B.S., Bloomsburg University; M.A., The Pennsylvania State University; M.S., West Chester University; Licensed Professional Counselor

Campbell, Steven E., Assistant Professor; B.A., Florida International University; J.D., Howard University; Statler Foundation Professor

Canepa, Paul M., Assistant Professor; B.S., Linfield College; M.S., University of Delaware

Capuzzi, Michael, Professor; B.A., Kings College; M.A., Crozer School of Social Change

Carman, Charles D., Professor; A.S., Delaware County Community College; B.S., Saint Joseph's University; M.S., Widener University; Certified Public Accountant

Carpenter, Elizabeth A., Associate Professor; B.A., Cedarville University; M.Ed., Kutztown University

Carter, Virginia M., Provost; B.A., State University of New York at Cortland; Ed.M., Ed.D., Rutgers, the State University of New Jersey
<table>
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<th>Name</th>
<th>Title/Position</th>
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<tr>
<td>Cartledge, Stacy B.</td>
<td>Assistant Professor; B.A., Miami University, M.F.A., University of Notre Dame</td>
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<tr>
<td>Cherim, Stanley M</td>
<td>Professor Emeritus, Chemistry</td>
</tr>
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<td>Childers, Daniel P</td>
<td>Professor; B.S., Ferrum College; M.A., University of Northern Colorado</td>
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<tr>
<td>Colgan, Lori A.</td>
<td>Manager, Grants and Contracts Accounting; B.S., Cabrini College; M.B.A., The Pennsylvania State University</td>
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<tr>
<td>Collier, Linda J.</td>
<td>Dean, Public Service and Social Sciences; B.A., J.D., Howard University; M.S., Saint Joseph’s University</td>
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<td>Colucci, Eileen W</td>
<td>Assistant Professor (Counselor); B.S., East Stroudsburg University; M.S., West Chester University</td>
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<td>Conley, Jennifer Dawn Bell</td>
<td>Assistant Professor; B.A., M.A., West Virginia University</td>
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<td>Connelly, Sandra M.</td>
<td>Assistant Professor; B.A., M.Ed., Widener University</td>
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<tr>
<td>Coupe, Denise J.</td>
<td>Accountant/Internal Auditor; B.S., Widener University</td>
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<tr>
<td>Craig, John B.</td>
<td>Assistant Dean, Public Service and Social Sciences; B.S.Ed., M.S.Ed., Temple University; Ed.D., University of Pennsylvania</td>
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<td>Craig, Ross Ann</td>
<td>Professor Emerita, Vice President for Client Services</td>
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<td>Cronin, John J.</td>
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<td>Csanady, John Gary</td>
<td>Program Manager, Carpentry, HVAC, Plumbing; B.S.S., The Pennsylvania State University</td>
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<td>Cubberley, Frances M</td>
<td>Vice President, Enrollment Management; B.S., Slippery Rock State College; M.S., Villanova University</td>
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<tr>
<td>Curran, Patti L.</td>
<td>Coadjunct Faculty, Program Director for Respiratory Therapy; B.S., M.Ed., Widener University</td>
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<tr>
<td>D’Angelo, Anthony J.</td>
<td>Professor Emeritus, Dean, Business and Computer Information Systems</td>
</tr>
<tr>
<td>Dadhich, Bela</td>
<td>Assistant Professor; B.S., Rutgers, the State University of New Jersey; M.S., Ph.D., Drexel University</td>
</tr>
<tr>
<td>Daly-Leonard, Anthony K.</td>
<td>Associate Professor; B.S., Wharton School, University of Pennsylvania; M.B.A., Temple University Executive Program; Certified Public Accountant</td>
</tr>
<tr>
<td>Danford, Alice Denise</td>
<td>Associate Professor; B.S., M.S., Southern Illinois University</td>
</tr>
<tr>
<td>Daniels-Randolph, Carlotta</td>
<td>Managing Director, Workforce Employment Services; B.A., Temple University; M.Ed., Cabrini College</td>
</tr>
<tr>
<td>Danowitz, Erica Swenson</td>
<td>Assistant Professor, Reference Librarian, A.B., Cornell University; M.A., The Pennsylvania State University; M.L.S., The University of Maryland</td>
</tr>
<tr>
<td>Davis, Gregory F.</td>
<td>Student Services Systems Specialist; B.S., Saint Joseph's University</td>
</tr>
<tr>
<td>Davis, William C.</td>
<td>Director, Municipal Police Academy; B.S., M.S., West Chester University</td>
</tr>
<tr>
<td>DeCaro, Jennifer E.</td>
<td>Assistant Professor; A.A.S., Delaware County Community College; B.S., Gwynedd-Mercy College; M.P.H., West Chester University</td>
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<tr>
<td>DeCosmo, Richard D.</td>
<td>President Emeritus</td>
</tr>
<tr>
<td>Dell’Osa, Lydia J.</td>
<td>Director, International Student Services; A.A., Delaware County Community College; B.A., M.S., Neumann College</td>
</tr>
<tr>
<td>DeLuca, Tonino</td>
<td>Director, Plant Operations and Construction Services; A.B.M.; Community College of Philadelphia</td>
</tr>
<tr>
<td>DePaul, Jane Barry</td>
<td>Project Coordinator, Office of Business Development; B.A., West Chester University</td>
</tr>
<tr>
<td>deProspero, Alfred N.</td>
<td>Professor Emeritus, English</td>
</tr>
<tr>
<td>deRuyter, Lana M.</td>
<td>Dean, Allied Health and Nursing; B.S.N., Immaculata University; M.S.N., Villanova University; Ph.D., Duquesne University</td>
</tr>
<tr>
<td>de Simone, Linda</td>
<td>Director, Southeast Center; B.S., M.A. Saint Joseph’s University; Ed.D., Nova Southeastern University</td>
</tr>
<tr>
<td>Devenney, Andrea</td>
<td>Administrative Program Coordinator; B.S., Cabrini College</td>
</tr>
<tr>
<td>Devenney, Winifred V.</td>
<td>Director, Information Technology Academy; B.A., Immaculata University; M.A., University of Phoenix</td>
</tr>
<tr>
<td>Devenny, Sandra G.</td>
<td>Assistant Professor; B.S., M.S., University of New Hampshire</td>
</tr>
<tr>
<td>Diamond, Kathryn R.</td>
<td>Assistant Director, Admissions; B.A., The Pennsylvania State University</td>
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<td>Dibiase, William J.</td>
<td>Professor Emeritus, Psychology</td>
</tr>
<tr>
<td>DiCintio, Matthew J.</td>
<td>Associate Professor; B.S., University of Pittsburgh; M.S., Ph.D., The Pennsylvania State University</td>
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<td>Dickerman, Christopher M.</td>
<td>Director, Human Resources; B.S., Villanova University; M.B.A., LaSalle University</td>
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<td>Diehl, Hope L.</td>
<td>Director, Admissions and Enrollment Services; B.A., Neumann College; M.Ed., Widener University</td>
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<td>Donohue, Paul L.</td>
<td>Professor Emeritus, Accounting</td>
</tr>
<tr>
<td>Doohan, Suzanne C.</td>
<td>Assistant Dean, Learner Services, Chester County Operations; B.S., M.Ed., The Pennsylvania State University</td>
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<tr>
<td>Dowd, Thomas F.</td>
<td>Assistant Professor; B.S., Saint Joseph’s University; M.S., George Washington University</td>
</tr>
<tr>
<td>Doyle, Christine M.</td>
<td>Director, Career and Counseling Center; B.A., Rosemont College; M.S., West Chester University</td>
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<td>Dreisbaugh, Elaine A.</td>
<td>Associate Professor; B.S.N., M.S.N., West Chester University</td>
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<td>Dubbs, Edmund E.</td>
<td>Professor Emeritus, Library</td>
</tr>
<tr>
<td>Durkin, Linda</td>
<td>Associate Professor; B.A., M.B.A., Troy State University</td>
</tr>
<tr>
<td>Eger, Henrik</td>
<td>Professor; B.A., University of Kent at Canterbury, England; M.A. (Sociology of Literature), M.A. (Applied Linguistics), University of Essex at Colchester, England; Ph.D., University of Illinois at Chicago</td>
</tr>
<tr>
<td>Eichinger, William J., Jr.</td>
<td>Supervisor, Southeast Learning Resource Center; B.A., Eastern University</td>
</tr>
<tr>
<td>Eill, E. Edward</td>
<td>Professor; B.S., Bloomsburg University; M.B.A., Widener University; M.S., University of Pennsylvania</td>
</tr>
<tr>
<td>Every, Danamare R.</td>
<td>Assistant Professor; B.A., University of Scranton; M.A., West Chester University</td>
</tr>
<tr>
<td>Fenimore, Cynthia C.</td>
<td>Associate Professor; B.A., Immaculata University; M.A., Marywood University</td>
</tr>
<tr>
<td>Ferone, Marjorie</td>
<td>Professor; A.A.S., Delaware County Community College; B.A., Goddard College; M.S., Villanova University</td>
</tr>
<tr>
<td>Flora, Linda Le</td>
<td>Assistant Professor; B.A., M.S., California State University; Ph.D., University of California</td>
</tr>
<tr>
<td>Frist, Wallace P., Jr.</td>
<td>Network and Security Specialist</td>
</tr>
<tr>
<td>Foster, Diane J.</td>
<td>Administrative Specialist; A.A.S., Delaware County Community College</td>
</tr>
<tr>
<td>Ford, Vivian B.</td>
<td>Professor; B.S., M.S., Cheyney University of Pennsylvania; Ph.D., North American University</td>
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<td>Name</td>
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<tr>
<td>Formichella, Dolores M</td>
<td>Professor; B.A., Cabrini College; M.A.(English), M.A.(Liberal Studies), Villanova University</td>
</tr>
<tr>
<td>Franco, Peter</td>
<td>Helpdesk Support I/Computer Technician Specialist; A.S.</td>
</tr>
<tr>
<td>Garrell, Barbara A.</td>
<td>Professor; B.S., M.Ed.</td>
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<td>Professor; B.A., M.S.</td>
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<td>Acting Director of Campus Life; B.A., M.S.</td>
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<td>Associate Professor; B.A., M.A.</td>
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<td>Director, Community Career Re-entry Programs; B.S.W.</td>
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<td>Assistant Professor; B.A., H.H. Lehman College; M.S., Ph.D.</td>
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<td>New Business Developer; B.A.</td>
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<td>Gillette, Mary Ann</td>
<td>Professor, Reference Librarian; B.A.</td>
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<td>Assistant Professor; B.S.</td>
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<td>Glavin, John A., Jr.</td>
<td>Vice President for Administration and Treasurer; B.S.</td>
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<tr>
<td>Gu, Beiye</td>
<td>Assistant Professor; B.A., M.Ed.</td>
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<td>Assistant Professor; B.A.</td>
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<td>Professor; B.A.</td>
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<td>Harris, Tanya</td>
<td>Assistant Professor; B.A., M.A.</td>
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<td>Hartz, Judith A.</td>
<td>Professor Emerita, Director, Employment and Benefit Programs</td>
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<tr>
<td>Hayward, Dawn L.</td>
<td>Assistant Dean, Communications, Arts, and Humanities; B.A., Kansas State University; M.A., Ph.D., University of Kansas</td>
</tr>
<tr>
<td>Hayward, Dorothea A.</td>
<td>Educational Advisor; A.A.</td>
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<td>Professor; B.A.</td>
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<td>Director, Institutional Effectiveness; B.A., M.Ed., Ph.D.</td>
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<td>Marketing Specialist; B.A.</td>
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<td>Holley, Eartha A.</td>
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<td>Hopkins, Elena M.</td>
<td>Associate Professor; M.A., Ph.D.</td>
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<tr>
<td>Jackson, Roberta S.</td>
<td>Enrollment Services Specialist; B.S.</td>
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<tr>
<td>Jansen, James R.</td>
<td>Dean, Arts and Sciences (Chester County Operations); B.A., Benedictine College; B.A. (Russian); B.A. (English/ESL) University of Utah; M.A., University of Wyoming; M.S. (Writing), M.A. (English), M.S. (Educational Administration), Portland State University; Ph.D., University of Utah</td>
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<td>Jarvis, Thomas J.</td>
<td>Assistant Director, Admissions; B.S.</td>
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<td>Assistant Professor; B.A.</td>
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<td>Johnson, Andrew Jr.</td>
<td>Director, Wellness, Athletics and Recreation; B.S.</td>
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<td>Johnson, Marcia A.</td>
<td>Associate Professor; B.S.Ed., M.S.Ed.</td>
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<td>Johnson, Michael R.</td>
<td>Professor; B.S., M.A.</td>
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<tr>
<td>Johnson, Robert Rex</td>
<td>Professor (Counselor), Career and Counseling Center; B.A., Alderson-Broaddus College; M.Div., Andover-Newton Theological School; M.Ed., Temple University</td>
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<tr>
<td>Jones, Grace M.</td>
<td>Assistant Professor; B.S.</td>
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<tr>
<td>Jones, Robert J.</td>
<td>Associate Professor; B.F.A., Kutztown University; M.F.A., Syracuse University</td>
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<tr>
<td>Jones, Walter J., Jr.</td>
<td>Web Programmer/Analyst</td>
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<tr>
<td>Joseph, Teneshia B.</td>
<td>Student Employment Services Coordinator; B.S.</td>
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<tr>
<td>Kalligoni, Jennifer A.</td>
<td>Assistant Professor (Counselor), Career and Counseling Center; B.A., M.S., West Chester University</td>
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<td>Karr, Elaine E.</td>
<td>Director, Public Safety; A.A.S.</td>
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<td>Keevill, Michele</td>
<td>Educational Advisor; A.A.</td>
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<tr>
<td>Kelly, Mariu</td>
<td>Assistant Professor; B.S.N., M.S.N.</td>
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<td>Kennedy, Janet A.</td>
<td>Human Resources Generalist-HRIS</td>
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<td>Kerner, Charles L.</td>
<td>Professor Emeritus, Mathematics</td>
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<tr>
<td>King, Kathy L.</td>
<td>Employment Assessment Specialist; B.S.</td>
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<td>Kirby, Michael L.</td>
<td>Assistant Professor; B.S., M.S.</td>
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<td>Kirschman, Jill S.</td>
<td>Associate Professor; B.S.</td>
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<td>Kohute, Christine</td>
<td>Assessment Advisor; B.A., M.Ed.</td>
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<td>Kontopoulos, Ourania</td>
<td>Professor, Reference Librarian; B.A., M.A.</td>
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<td>Kovach, Gary R.</td>
<td>Budget Director; B.S.</td>
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<tr>
<td>Kozachyn, Karen</td>
<td>Associate Dean, Community and Corporate Education; A.A.S. (Marketing), A.A.S. (Retailing), Camden County College; B.S., LaSalle University; M.S., Neumann College</td>
</tr>
</tbody>
</table>
LaFashia, A. Victoria, Executive Assistant to the President and Assistant Secretary to the Board of Trustees; A.S., Delaware County Community College

LaMonico, Jeffrey, Assistant Professor; B.A., LaSalle University; M.A., Villanova University

Lang, Jane A., Director, Student Employment Services and Co-op; B.S., Chestnut Hill College; M.A., Villanova University

Latourell, John S., Associate Professor; B.A., Fairhaven College; M.A., University of Washington

Legge, Kristina P., Director, Supplemental Learning Programs; B.S., M.Ed., Temple University

Lenker, Holly J., Administrative Project Coordinator; B.A., Millersville University

Leroy, Melanie O., Assistant Professor; B.S.N., Immaculata University; M.S.N., Widener University; CRNP, University of Delaware; Ph.D., Widener University

Lewandowski, Theodore C., Professor; B.A., M.S., Villanova University; CAGS, Temple University; Certified Physician Assistant

Lillis, Carol A., Professor Emerita, Dean, Allied Health and Nursing

Lin, Steve Li-Hsien, Assistant Professor; D.V.M., National PingTung Institute of Agriculture; Ph.D., The Ohio State University

Linder, John A., Professor; B.A., Widener University; M.Ed., Kutztown University

Lugg, Thomas W., Registrar; B.A., Albright College; M.Ed., Springfield College

Maass, Dorothy, Professor Emerita, Business

Macalous, Thomas P., Professor Emeritus, English

MacClay, Dawn H., Assessment Advisor; B.S., Bucknell University; M.A., Eastern University

MacKeag, Naomi H., Assistant Professor; B.S., Dalhousie University, Halifax, Nova Scotia; M.S., University of Victoria, Victoria, British Columbia; Ph.D., McGill University, Montreal, Quebec

Maiozzo, Ann, Professor (Counselor), Career and Counseling Center; B.S., Guilford College; M.Ed., University of North Carolina at Greensboro; Ed.D., Temple University

Makowski, Anthony J., Assistant Professor; B.A., University of Delaware; M.A., Villanova University

Malfitano, Jennifer, Professor; B.S., Mount St. Mary’s College; M.B.A., Virginia Polytechnic Institute and State University; Certified Public Accountant

Mancini, Vincent N., Professor; B.A., LaSalle University; M.Ed., Temple University; M.A.G.A., University of Pennsylvania

Manz, M. Nora, Transfer Specialist; B.S., Alfred University; M.A., Ed.M., Teachers College, Columbia University

Marano, Ralph, Assistant Professor (Counselor), Southeast Center; A.A.S., Delaware County Community College; B.S.N., LaSalle University; M.S., West Chester University; Licensed Professional Counselor

Markle, William J., Associate Vice President of Finance; B.S., Saint Joseph’s University

Marks, Beverly C., Professor Emerita, Reading

Marran, John M., Professor Emeritus, Philosophy

Martino, Dolores E., Executive Assistant to the Provost; B.S., Saint Joseph’s University; M.Ed., Temple University

Maruca, Raymond, Professor; B.A., St. John’s University; M.A., Fordham University

McCalla, Connie L., Vice President, Human Resources; B.A., Temple University; M.S., Baruch College/CUNY; J.D., University of Richmond School of Law

McGarry, Edward, Web Services Developer; A.A.S., Delaware County Community College

McGawry, Trudie B., Assistant Professor; B.A., Winthrop University; M.S., Clemson University

McGinty, Patrick C., Assistant Director, International Student Recruitment; B.A., Northeastern University; M.L.S., University of Pennsylvania

McKenna, Maryann V., Professor Emerita, Nursing

McMeans, Bonnie L., Associate Professor; B.A., West Chester University; M.J., Temple University; M.A., Saint Joseph’s University

McNicholas, Thomas P., Professor Emeritus, Vice President, Instruction, Academic and Student Affairs

Mearns, James L., Co adjunct Faculty, Director, Clinical Education for Respiratory Therapy; A.A.S., Delaware County Community College; B.A., West Chester University; M.Div., Lancaster Theological Seminary

Meyer, Cheryl A., Professor; B.S.N., M.S.N., University of Pennsylvania

Micks, Kendrick M., Director of First Year Experiences; B.S., West Chester University

Mishott, Leonard G., Assistant Director, Plant Operations and Construction Services

Mitch, Diane M., Assistant Director, Accounting Operations; A.S., Montgomery County Community College; B.S., West Chester University

Morsaczewski, Candace E., Professor; B.S., Lamar University; M.S. University of Vermont

Moreno, Jose Francisco, Assistant Professor; B.A., M.A.(Spanish), M.A. (French), Ph.D., Texas Tech University

Moscariello, Dawn M., Director, Learning Centers; B.S.Ed., Temple University; M.Ed., Widener University

Mullin, Carol A., Director, Assessment Center; B.S., West Chester University; M.S., Neumann College

Mumley, Cynthia A., Helpdesk Support I/Computer Technology Specialist; A.A., Delaware County Community College; B.S., Neumann College

Myers, Joseph P., Assistant Professor; B.A., The University of Texas at Austin; M.A., The University of Texas at Arlington; Ph.D., Temple University

Myrick, Gail P., Educational Advisor; A.A., Delaware County Community College

Navarro, Pedro, Dean, Learning Support Services; A.A.S., Delaware County Community College; B.S., West Chester University; M.B.A., Wilmington College

Northern, Lametha E., Acting Director, Act 101; B.A., Widener University; M.Ed., Kutztown State College

Novielli, Michael J., Helpdesk Support I/Evenings and Weekends; B.S., DeVry University

Molvane, Richard G., Professor Emeritus, English

O’Brien, Joanne M., Associate Professor; B.S., West Chester University; M.S.N., Villanova University

Ollinger, William M., Assistant Professor; B.A., University of New Hampshire, B.S., M.S., Ph.D., Rutgers, the State University of New Jersey

Orazi, Jennifer M., Assistant Director, Student Employment Services and Co-op; B.A., Indiana University of Pennsylvania; M.S., West Chester University

Ortiz, Linda M., Assistant Director, Admissions; A.A., A.S., Polk Community College; B.A., Warner Southern College
Padula, Ronald M., Professor; B.S., Widener University; M.Ed., Ed.D., Temple University

Panza, Bridget H., Assistant Professor (Counselor), Exton Center; B.S., Chestnut Hill College; M.S., West Chester University

Parker, Jerome S., President; B.A., Wesleyan University; M.S., Ph.D., University of Wisconsin

Pat, Pol-Paul, Assistant Professor; B.A., Eastern University; M.F.A., The Pennsylvania State University

Paterno, David J., Associate Professor; A.A., The County College of Morris; B.A., M.A., The William Paterson University of New Jersey

Payne, Chatina R., Learning Technology Support Specialist; A.A.S., Pennsylvania Institute of Technology; B.S., Neumann College; M.S. Wilmington University

Peich, Dianne, Professor Emerita, English

Philmon, Sharvette Law, Assistant Dean, Allied Health and Nursing; B.S.N, Howard University; M.S.N, University of Pennsylvania

Picciani, Diane M., Associate Professor; Director, Center to Promote Excellence in Teaching and Learning; B.S, Temple University; M.A, West Chester University; Ed.D., Widener University

Piorkowski, Joseph D., Professor Emeritus, Director, Admissions

Plachuta, Alexander, Director, Distance Learning Services; B.S., West Chester University; M.S., Kean University; M.S., California State University

Powell, W. Jack, Jr., Director, Technical Education; B.S., Temple University; M.Ed., University of Delaware

Pullin, Beverly D., Payroll Supervisor

Quinn, Noreen A., Budget Accountant/Analyst; A.S., Delaware County Community College; B.A. Immaculata University

Railey, Clayton A., III, Dean, Communications, Arts and Humanities; B.A., Dickinson College; M.Div., S.T.M., Jesuit School of Theology; M.A., St. Louis University; Ph.D., Vanderbilt University

Raman, Swarup R., Professor; B.A., M.A., Madras University

Randall, Catherine A., Assistant Professor; B.S.N, State University of New York at Buffalo; M.S., Buffalo State College

Rapp, Susan M., Shisler, Director, Grants Management; B.A., Our Lady of Angels College

Raschka, James G., Associate Professor; B.S.A.E., Purdue University; M.B.E., Claremont University

Rarig, Jenny M., Director, Purchasing; A.A., Delaware County Community College; B.S., Strayer University

Rege, Karen M., Director, Library Services; B.M., University of Hartford; M.A., University of Michigan, M.S., Drexel University; Ph.D., University of Delaware

Rhodes, Marianne Kirby, Director, Public Relations and Communications; A.A., Delaware County Community College; B.A., Neumann College

Robinson, Cynthia Hartman, Director, Alumni Relations; A.A., Neumann College

Robson, David J., Assistant Professor; B.A., Temple University; M.S., Saint Joseph's University; M.F.A., Goddard College

Roginsky, Lynn, Assistant Professor; B.S., Moravian College; M.S., Lehigh University

Rolando, Dominique, Professor; B.T.S., Academie de Paris; M.A.T., School for International Training, Vermont

Roman, James, Professor Emeritus, English

Rothrock, Jane C., Professor; B.S.N., M.S.N., University of Pennsylvania; Ph.D., Widener University; Fellow, American Academy of Nursing (FAAN)

Roy, Mary Ellen, Nursing Program Coordinator; R.N., B.S.N., The Pennsylvania State University; M.S.N., Villanova University

Russo, Dorothy A., Professor; B.A., Salve Regina College; M.A., Brown University

Sagle, Jonathan L., Associate Professor; B.S., M.S., York University; Ph.D., Lehigh University

Salavitarab, Jafar Jeff, Assistant Professor; B.S., Tehran Business College; M.A., The Pennsylvania State University; M.B.A., Shippensburg University

Samoylo, John M., Professor; B.A., Providence College; Ed.M., Temple University

Santarasci, Pamela, Assistant Professor; B.S.N., Villanova University; M.S.N., Gwynedd-Mercy College

Sarafinas, Stephanie K., Assistant Professor (Counselor), Chester County; B.A., University of Pittsburgh; M.A., Immaculata University

Schank, Kathleen M., Assistant Professor; A.A., Delaware County Community College; B.A., Rosemont College; M.S.S., Bryn Mawr College

Schantz, Valerie Ann, Assistant Professor; B.S., M.S.Ed., Mansfield University

Schick, Ruth, Professor Emerita, Counselor

Schlairet, Margaret A., Professor Emerita, Biology

Schmidt, Michael B., Helpdesk Support II/Computer Technician Specialist

Schultz, Juanita Q., Professor Emerita, English

Schumacher, Steven H., Helpdesk Support I/Evenings and Weekends; A.A., Delaware County Community College

Schurman, Jane M., Interim Director, Pennocks Bridge Campus; A.A.S., Delaware County Community College; B.S., Neumann College; M.S., Wilmington College

Seipel, Marilyn L., Supervisor, Learning Resource Centers, Downingtown Campus and Exton Center; B.A., Russell Sage College

Shaffer, Christine E., Instructional Design Specialist; B.A., Shippensburg University; M.Ed., Widener University

Shames, Diane, Professor; B.S., M.S.Ed., Monmouth University; Reading Specialist

Shannon, Patricia M., Assistant Director, Enrollment Services; B.A., M.S., West Chester University

Shuman, Labron K., Professor; B.A., Haverford College; J.D., University of Michigan

Sidoti, Michael F., Professor (Counselor), Career and Counseling Center; B.S., Kent State University; M.A., Villanova University

Silage, Kathleen R., Assistant Professor; R.N., Philadelphia General Hospital, Training School for Nurses; B.S.N., M.S.Ed., University of Pennsylvania; M.S.N., Wilmington University

Singer, Sarah, Professor; A.B., Trinity College; M.A., Villanova University

Siravo, Caroline A., Financial Aid Advisor/Admissions Associate; B.S., Cabrini College; M.S., West Chester University

Sloat, Donald R., Project Manager, Academic Technology; B.S., Peirce College

Sloat, Philip N., Helpdesk Technician II; A.S., Delaware County Community College

Slough, Robert W., Professor Emeritus, Vice President for Administration and Treasurer
Smith, Ann-Marie M., Associate Professor; B.A., Muhlenberg College; M.S., Philadelphia University

Smith, Arthur E., Professor Emeritus, Counselor

Smith, Nan L., Director, Office of Business Development; B.A., California State University; M.Ed., University of Louisville

Smith, Stephen P., Assistant Professor; B.A., M.A., Villanova University; M.F.A., University of Delaware

Smoker, Elizabeth M., Assistant Professor; R.N., The Chester County Hospital School of Nursing; B.S., Immaculata University; M.S.N., Widener University

Sneed-Moore, Mychell, Acting Dean, Business and Computer Information Systems; B.A., Shaw University; M.A., Miami University (Ohio)

Snyder, Grant S., Vice Provost for Student and Instructional Support Services; B.A., M.Ed., University of Delaware; Ph.D., University of Pennsylvania

Snyder, Jennifer L., Associate Professor; B.A., Kalamazoo College; M.S., Michigan State University; Ph.D., Western Michigan University

Somerville-Reeves, Madeline O., Professor (Counselor), Career and Counseling Center; B.A., East Stroudsburg State College; M.A., Glassboro State College

Sonchaeng, Chayawan, Assistant Professor; A.A., Lansing Community College; B.A., Chulaongkorn University; M.A., Michigan State University

Soong, Chi-Shang (Tony), Professor; B.S., National Taiwan University; M.A., Temple University; M.S., University of North Carolina at Chapel Hill; Ph.D., Temple University

Spilane, George T., Professor Emeritus, English

Stranix, Susan, Assistant Professor; A.S., Delaware County Community College; B.S., Shippensburg University; M.B.A., Widener University

Sullivan, George J., Chief Information Officer; B.S., M.B.A., Rutgers, the State University of New Jersey

Sutter, Marie S., Professor Emerita, Director, Learning Centers

Svendsen, Alf, Professor Emeritus, Art

Sviridovsky, Tatiana, Assistant Professor; B.S., M.S., Gertsen State Pedagogical University

Swikay, Hal M., Assistant Professor; B.A., M.A., University of Pennsylvania; Ph.D., Lehigh University

Szalai, Imre A., Professor Emeritus, Physics

Szczurek, Thomas G., Professor; B.S., Philadelphia College of Textiles and Science; M.B.A., Widener University

Talebi, Mujtaba, Web Programmer/Analyst; B.S., M.S., Villanova University

Tillson, Joanna S., Assistant Professor, Reference Librarian; B.A., Wellesley College; M.L.S., University of Washington

Thomas, Pramod, Learning Resource Administrator; B.E., University of Madras; B.Tech., College of Aeronautics; M.B.A., Dowling College; M.S., The Pennsylvania State University

Toole, Raymond L., Director, Financial Aid; B.S., University of Scranton; M.B.A., Saint Joseph's University

Urbanelli, Janet L., Professor; B.S., Lock Haven State University; M.Ed., The Pennsylvania State University

Valente, Blanca, Director, Academic Computing; A.A.S., Delaware County Community College; B.A., West Chester University; M.C.S., Villanova University

Varacalli, Mary Anne, Professor Emerita, Dean, Community and Corporate Education

Vaughn, Andrea B., Manager, Chester County Alliance; B.A., Neumann College

Videon, Carol G., Professor, Reference Librarian; B.S., Ursinus College; M.L.S., Drexel University

Viscusi, Raymond J., Director of Safety and Security

Waddell, Bernadette E., Assessment Specialist; B.A., Cheyney University

Wallace, Angela M., Financial Aid Advisor, Southeast Center; B.S., Delaware State University

Walsh, Bernadette, Development and Grants Writer; B.A., Notre Dame College of Ohio; J.D., Cleveland-Marshall College of Law; LL.M., Temple University

Ward, Susan M., Assistant Professor; B.A., Southwest Baptist University; M.A., West Chester University; Ph.D., Regent University

Wellington, Eric R., Acting Dean, Technical Education and Special Assistant to the CIO; B.A., Youngstown State University; M.A., West Chester University; Ph.D., Capella University

Williams, S. Ife, Assistant Professor; B.A., Lincoln University; M.A., Atlanta University; Ph.D., Clark Atlanta University

Wolcik Kuhn, Douglas M., Supervisor, Learning Resource Center, Pennocks Bridge Campus; B.A., M.A., Rosemont College

Woodward, Lawrence A., Professor; Registered Architect, Commonwealth of Pennsylvania; B.A., M.Arch., University of Pennsylvania

Woomer, William H., Esq., Associate Professor; B.S., M.B.A., J.D., Widener University

Woron, Susan P., Assistant Professor; B.A., Holy Family College; M.Ed., Temple University; Ed.D., Widener University

Wusheansky, Lori, Educational Technology Specialist; B.A., Widener University; M.Ed., The Pennsylvania State University

Wyman, Bruce T., Professor Emeritus, Sociology

Yonkoske, Denise Ann, Assistant Professor; B.S.N., M.S.N., Immaculata University

Young, Eleanor M., Associate Professor; B.S., Drexel University; M.Ed., The Pennsylvania State University

Yox, David E., Professor; B.F.A., University of Arizona, M.F.A., The School of the Art Institute of Chicago
ON THE WEB/ACADEMIC CALENDAR 2010-2011

Fall, 2010

Faculty Report
Late Registration Day
Faculty In-Service Days
Classes Begin
Labor Day Holiday
Holiday for Students, Administrators and Support Staff
Faculty In-Service Days
Mid-term Grade Warning Date
Registration for Spring 2011 Begins
Recommended Final Date for Filing FAFSA Form for Financial Aid for Spring Classes
Deadline for Student Withdrawals
Deadline to Apply for Winter Graduation
Thanksgiving Holiday
Classes End
Final Examinations

Spring, 2011

Faculty Report
Late Registration Day
Faculty In-Service Days
Classes Begin
Martin Luther King Holiday
Holiday for Students, Administrators and Support Staff
Holiday for Students, Administrators and Support Staff
Registration for Fall 2011 and Summer 2011 Begins
Deadline to Apply for Spring Graduation
Mid-term Grade Warning Date
Spring Break
Deadline for Student Withdrawals
Recommended Final Date for Filing FAFSA Form for Financial Aid for Summer Classes
Day/Weekend Classes End
Evening Classes End (5:00 PM or later start time)
Final Examinations
Faculty Summer Institute
Commencement

Summer I, 2011

Late Registration Day
Classes Begin
Memorial Day Holiday (No Classes)
Deadline for Student Withdrawals
Classes End
Recommended Final Date for Filing FAFSA Form for Financial Aid for Fall Classes

Summer II, 2011

Late Registration Day
Classes Begin
Deadline to Apply for Summer Graduation
Deadline for Student Withdrawals
Classes End

The College reserves the right to modify the Academic Calendar. Changes will be communicated.

*For accelerated courses, the deadline for student withdrawals will be the Friday ending the first full week past the 60% point of the course.