



**Delaware County
Community College**

Serving Delaware and Chester Counties

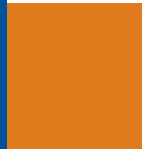
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Delaware County Community College • Course Catalog 2014 - 2015



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**Delaware County
Community College**

Course Catalog
2014 - 2015

PROGRAMS OF STUDY

COLLEGE AND UNIVERSITY TRANSFER PROGRAMS—ASSOCIATE IN ARTS (A.A.), ASSOCIATE IN FINE ARTS (A.F.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.)

Associate degree programs designed to prepare students for immediate employment. With planning, these courses may transfer to a bachelor's degree. Students in these programs who plan to transfer should make a plan with an advisor or transfer counselor as early as possible.

CAREER PROGRAMS CERTIFICATE

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

PROGRAMS OF STUDY COLLEGE AND UNIVERSITY TRANSFER PROGRAMS

Administration of Justice A.A.	English A.A.
Behavioral Science-Anthropology A.S.	Global Studies A.A.
Business Administration A.S.*	Graphic Design A.F.A.
Communication Arts-Communication Studies Option A.A.*	History A.A.
Communication Arts-Journalism Option A.A.	Human Service A.S.
Communication Arts-Theatre Option A.A.	Liberal Arts A.A.*
Computer Science A.S.	Mathematics / Natural Science A.S.
Early Childhood Education A.A.	Photography A.F.A.
Education A.A.*	Psychology A.S.
Engineering A.S.	Science for Health Professions A.S.*
Engineering Technology A.S.	Sociology A.S.
	Studio Arts A.F.A.

CAREER PROGRAMS

Accounting A.A.S.	Information Technology - Web Development
Advanced Technology A.A.S.	Option A.A.S., Certificate
Automotive Technology Certificate*	Machining Operations Certificate
Carpentry Certificate	Manufacturing Operations Certificate
Child Development Associate Certificate*	Medical Assistant A. A.S., Certificate*
CNC Programming, Lathe & Mill Certificate	Medical Billing Certificate
Computer-Aided Drafting and Design Certificate	Medical Coding and Billing A.A.S., Certificate
Computer-Aided Machining, Lathe, Mill & EDM Certificate	Medical Coding and Billing for Healthcare Professionals Certificate
Construction Supervision Certificate	Municipal Police Academy Certificate
Culinary Arts A.A.S., Certificate*	Nursing A.A.S.*
Early Childhood Director Certificate	Paralegal Studies A.A.S., Certificate
Electrical Certificate	Paramedic - Advanced Life Support A.A.S.
Emergency Medical Technician Certificate	Perioperative Nursing Certificate
Emergency Management and Planning A.A.S.	Photography Certificate
Entrepreneurship Certificate	Plumbing Apprenticeship Certificate
General Business A.A.S.	Process Control Technology Certificate
General Studies A.A.S.*	Professional Accounting Certificate
Health Care Management A.A.S.	Respiratory Therapy A.A.S.
Health Studies A.A.S.*	Skilled Trades A.A.S.
Health Studies - Pre-Nursing Option A.A.S.*	Small Business Management Certificate*
Heating, Ventilation, Air Conditioning, Refrigeration Certificate*	Surgical Technology A.A.S.
Hotel and Restaurant Management A.A.S.	Technical Studies A.A.S.
Human Resource Management Certificate*	Theatre Arts Certificate
Industrial Production Technician Certificate	Welding Certificate
Industrial Systems Technology Certificate*	
Information Technology - Computer Programming Option A.A.S.	
Information Technology - Game Development Option A.A.S.	
Information Technology - Help Desk/Technical Support Option A.A.S.	
Information Technology - Interactive Multimedia Option A.A.S., Certificate	
Information Technology - Mobile Computing Option A.A.S., Certificate	
Information Technology - Network Engineering Option A.A.S.	

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.

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

EMERGENCY SCHOOL CLOSINGS

In the event of a major snowstorm or other emergency, students will be contacted directly by telephone through an automated system. Students may also tune in to local radio stations that cooperate with the Philadelphia Emergency Communications Headquarters to find out whether or not the College is closed. The College's radio code number is 470 for day classes and 2470 for evening classes.

- The College makes the closing or delayed opening decision available to the public in the following ways:
- On the College's website (www.dccc.edu)
 - Broadcast on KYW 1060 AM radio
 - Broadcast on KYW Channel 3 television
 - Online at KYW1060.com
- In addition, school closing announcements are also made on the following Philadelphia television stations: WPVI-TV (6ABC), WCAU-TV (NBC10), and WTXF-TV (Fox29).

There are times when off-campus classes held in facilities of other institutions are cancelled because of the closing of that particular facility. You may need to check with the facility or institution for up-to-date closing information if you have questions.

ASSIGNED CODE #	CLASS TIME	COUNTY	CLASS LOCATIONS
470	Day	Delaware	Marple, Southeast Center, Upper Darby Center
2470	Evening	Delaware	Marple, Southeast Center, Upper Darby Center
483	Day	Chester	Brandywine Campus, Downingtown, Exton Center, Rhoads Education Bldg. at The Chester County Hospital
2483	Evening	Chester	Brandywine Campus, Downingtown, Exton Center, Rhoads Education Bldg. at The Chester County Hospital
1295	Day	Chester	Pennocks Bridge Campus
2295	Evening	Chester	Pennocks Bridge Campus
1420	Day	Chester	Phoenixville Campus
2420	Evening	Chester	Phoenixville Campus

Students and staff should use their own judgment as to whether they can make it to campus without jeopardizing their own safety and the safety of others.

The College reserves the right to modify the Academic Calendar. Changes will be communicated to students.

*For accelerated courses, the deadline for student withdrawals will be the Friday ending the first full week past the 60% point of the course.

ACADEMIC CALENDAR 2014-2015

Fall 2014	
Faculty Report	August 27
Late Registration	August 27
Part-Time Faculty Evening In-service/Orientation	August 28
Faculty In-service Days	August 28-29
Labor Day Holiday (No Classes – College Closed)	Aug. 30-Sep. 1
Classes Begin	September 2
No Show Withdrawal Dates	September 2-26
Part-Time Faculty Evening In-service	October 10
Faculty In-Service Days (No Classes)	October 20-21
Registration for Spring 2015 Begins for Current Students	October 27
Mid-term Grade Warning Date	October 31
Recommended Priority Date for Filing FAFSA Form for Financial Aid for Spring Classes	November 1
Deadline for Student Withdrawals	November 7
Registration for Spring 2015 Begins for New Students	November 10
Deadline to Apply for Winter Graduation	November 15
Thanksgiving Holiday (No Classes – College Closed)	November 27-30
Classes End	December 12
Final Examinations	December 13-18
Deadline for Faculty Submission of Grades (10:00 AM)	December 19

Fall 2014 Accelerated Terms	
Start of First Accelerated Term	September 2
No Show Withdrawal Dates	September 10-11
Deadline for First Accelerated Term Student Withdrawals	October 3
End of First Accelerated Term	October 18
Start of Mid-semester Accelerated Term	October 22
No Show Withdrawal Dates	October 30-31
Deadline for Mid-semester Accelerated Term Student Withdrawals	November 26
End of Mid-semester Accelerated Term	December 13

Winter 2014-2015	
Classes Begin	December 19
No Show Withdrawal Dates	December 26-28
Deadline for Student Withdrawals	January 7
Classes End	January 18

Spring 2015	
Faculty Report	January 14
Late Registration	January 14
Part-Time Faculty Evening In-service/Orientation	January 15
Faculty In-service Days	January 15-16
Martin Luther King Jr. Holiday (No Classes – College Closed)	January 19
Classes Begin	January 19
No Show Withdrawal Dates	January 20
Presidents Day Weekend Holiday (No Classes – College Closed)	February 9-13
Part-Time Faculty Evening In-service	February 14-16
Faculty In-service Days (No Classes)	February 17
Deadline to Apply for Spring Graduation	February 17-18
Spring Break	March 15
Registration for Fall 2015 and Summer 2015 Begins for Current Students	March 16-22
Mid-term Grade Warning Date	March 27
Recommended Priority Date for Filing FAFSA Form for Financial Aid for Summer Classes	April 1
Deadline for Student Withdrawals	April 3
Registration for Fall 2015 and Summer 2015 Begins for New Students	April 13
Classes End	May 11
Final Examinations	May 12-18
Faculty Summer Institute	May 19-20
Deadline for Faculty Submission of Grades (10:00 AM)	May 20
Commencement	May 21

Spring 2015 Accelerated Terms	
Start of First Accelerated Term	January 20
No Show Withdrawal Dates	January 28-29
Deadline for First Accelerated Term Student Withdrawals	February 27
End of First Accelerated Term	March 14
Start of Mid-semester Accelerated Term	March 23
No Show Withdrawal Dates	March 31-April 1
Deadline for Mid-semester Accelerated Term Student Withdrawals	April 24
End of Mid-semester Accelerated Term	May 11

Summer I 2015	
Late Registration	May 18
Memorial Day Holiday (No Classes – College Closed)	May 25
Classes Begin	May 26
No Show Withdrawal Dates	June 3-4
Start of ESL Summer Session	June 9
Deadline for Student Withdrawals	June 22
Recommended Priority Date for Filing FAFSA Form for Financial Aid for Fall Classes	July 1
Classes End	July 1
Deadline for Faculty Submission of Grades (10:00 AM)	July 6

Summer II 2015	
Late Registration	June 29
Independence Day Holiday (No Classes – College Closed)	July 2
Classes Begin	July 7
Deadline to Apply for Summer Graduation	July 15
No Show Withdrawal Dates	July 15-16
Deadline for Student Withdrawals	August 3
Classes End	August 13
Deadline for Faculty Submission of Grades (10:00 AM)	August 18

Delaware County Community College

2014-2015 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.

DELAWARE 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

UPPER DARBY CENTER

Barclay Square
1570 Garrett Road
Upper Darby, PA 19082
610-723-1250

CHESTER COUNTY

DOWNINGTOWN CAMPUS

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

EXTON CENTER

912 Springdale Drive
Whiteland Business Park
Exton, PA 19341
610-450-6500

BRANDYWINE CAMPUS

443 Boot Road
Downingtown, PA 19335
610-723-1100

PENNOCKS BRIDGE CAMPUS

280 Pennocks Bridge Road
West Grove, PA 19390
610-869-5100

PHOENIXVILLE CAMPUS

1580 Charlestown Road
Phoenixville, PA 19460
610-723-1104

THE CHESTER COUNTY HOSPITAL

701 East Marshall Street
West Chester, PA 19380
610-431-5274

www.dccc.edu

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Commission on Higher Education, 3624 Market Street, Philadelphia, PA 19104.

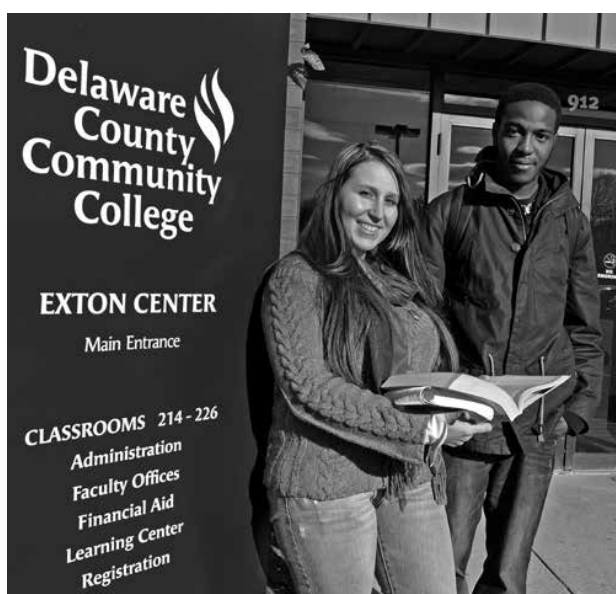
DELAWARE COUNTY **COMMUNITY COLLEGE**

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. The material within this catalog is subject to change and was current as of May 2014.

BreatheEASY
TOBACCO-FREE CAMPUS

College Now Tobacco-Free

Delaware County Community College has joined numerous other colleges in the region and beyond in an effort to promote health and wellness by going tobacco-free. The policy prohibits the use of any tobacco product (cigarettes, cigars, pipes, snuff, chewing tobacco, etc.), on College owned or leased property. It is intended to eliminate exposure to secondhand smoke and provide an environment supportive of tobacco-free lifestyles. More information and resources are available at: www.dccc.edu/tobacco-free



Students at the Exton Center.

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ABBREVIATIONS AND DEFINITIONS

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

ACC, Accounting	EGY, Energy Technology	MTT, Machine Tool Technology
ADJ, Administration of Justice	ELT, Electrical Occupations	MUS, Music
AHA, Health Administration	EMER, Emergency Management and Planning	NET, Network Engineering
AHM, Allied Health Medical	EMS, Emergency Medical Services	NUS, Nursing
AHN, Allied Health Nursing	ENG, English	OCS, Occupational Studies
AHS, Surgical Technology	ESL, English as a Second Language	PCT, Process Control Technology
ARB, Arabic	ESS, Earth and Space Science	PHI, Philosophy
ARC, Architecture	FRE, French	PHY, Physics
ART, Art	FST, Fire Science Technology	PLB, Plumbing
ASL, Sign Language	GER, German	PLG, Paralegal Studies
AUT, Auto Mechanics	HEB, Hebrew	POL, Political Science
BIO, Biology	HIS, History	PSY, Psychology
BUS, Business	HRM, Hotel and Restaurant Management	REA, Reading
CHE, Chemistry	HUM, Humanities	RTH, Respiratory Therapy
CHI, Chinese	HUS, Human Services	RUS, Russian
COMM, Communication Studies	HVA, Heating, Ventilating, Air Conditioning and Refrigeration	SCI, Science
CPT, Carpentry	IMM, Interactive Multimedia	SOC, Sociology
CSEL, College-Sponsored Experiential Learning	INS, Insurance	SPA, Spanish
CUL, Culinary Arts	INT, Interdisciplinary	SWO, Social Work
DPR, Computer Information Systems	IST, Industrial Systems Technology	TCC, Technical Communications
DRA, Drama	ITA, Italian	TCS, Construction Technology
ECE, Early Childhood Education	MAT, Mathematics	TDD, Drafting and Design Technology
ECO, Economics	MATH, Business Math	TEL, Electronics Technology
EDU, Education	MCR, Microcomputers in Business	TME, Mechanical Technology
EGR, Engineering	MPT, Municipal Police Training	WLD, Welding

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 coursework on an accelerated basis

Associate Degree (A.A., A.S., A.A.S., A.F.A.): 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 (Test of General Educational Development): a test for people who have not graduated from high school that is used to confirm their mastery of information covered in a basic high school curriculum

Major: the course of study in which a student concentrates coursework, time and attention

Placement Test: assessment given to new students to determine their 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 coursework

Semester: usually a fifteen-week period in which college courses are completed

DEGREE AND CERTIFICATE REQUIREMENTS

Delaware County Community College's Philosophy on General Education

The College is dedicated to a comprehensive effort that encourages in individual students the attitude of inquiry, the skills of problem solving and concern for the values of a democratic society. This philosophy of general education seeks to give each student the knowledge, skills and values needed for lifetime learning and for becoming a self-fulfilled individual.

Associate Degree

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 posted on *delGATE* during the appropriate application period. They are also available at the Marple Campus Student Records Office, and at off-campus locations, in October, March, and June for December, May and August graduations respectively.



A student celebrates graduating.

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) Mathematics/Natural Science and Science for the Health Professions
- 2) Computer Information Systems and Information Technology and 4) General Business and any of the following majors: Business Administration, Accounting 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

Delaware County Community College's 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 Delaware County Community College 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 Delaware County Community College 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.

6 COLLEGE COMPETENCIES

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 critical thinking and technology skills to meet information needs for their professional, personal, and academic life.

Therefore, graduates should be able to:

1. Select, access, and use appropriate sources for content.
2. Evaluate information for relevancy, currency, and appropriateness.
3. Organize and synthesize information into knowledge.
4. Describe the components of computer hardware and software and their uses.
5. Create and edit reports and presentations using appropriate software.
6. Communicate electronically using methods such as email, forums, and chatrooms.
7. Use the Internet to search for, retrieve, and evaluate information.
8. Understand the concept of databases and data storage.
9. Understand the legal and ethical issues regarding plagiarism and copyright.

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 coursework 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 coursework 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.

ADMISSION PROCEDURES

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. All students seeking credit coursework 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 coursework, please follow these steps:

1. Submit an admission application along with the non-refundable \$25 processing fee:
 - 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 coursework must submit official transcripts from all postsecondary schools attended, and the petition for transfer of credit.
 - International students must submit an official report of their academic records of secondary and postsecondary education from a NACES (National Association of Credential Evaluation Services) approved member, original bank statement, and notarized affidavit of support verifying ability to meet expenses before an I-20 is issued.
2. Accepted students will receive information about scheduling or waiving our placement test. Students with SAT/ACT scores taken within the past five years are encouraged to submit their scores for consideration of waiving the placement test. Students with prior college credit in English Composition 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 also participate in a College Planning Session.

Readmission

Students who have not been enrolled for a year or more or previously applied but did not take classes must reapply to the College. You must follow these steps:

1. Submit an application for admission and check the box on the application that reads, "Check here if applying for readmission." You do not need to pay the \$25 application fee again.
2. Complete the College's Placement Test if you did not do so when you previously applied to the College or if you did not waive the Placement Test.
3. If you attended another college since leaving Delaware County Community College and you want to transfer the credits here, you must submit an official transcript. See "Transferring to Delaware County Community College."
4. Participate in a College Planning Session to schedule your classes.

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 coursework 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. 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 in which 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 Marple Campus, Southeast Center, Downingtown Campus, Pennocks Bridge 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

There is a special international student application for individuals who wish to attend on a student visa. Nursing, surgical technology, and respiratory therapy programs have special admission procedures. 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 Municipal Police Academy (610-359-7386) for admission procedures. Students interested in the Plumbing Apprenticeship should call 610-356-4800 for admission procedures. Paramedic-Advance Life Support applicants must contact the Program Manager (610-723-6315) for special procedures. Perioperative Nursing applicants should call the Allied Health, Emergency Services and Nursing Department (610-359-5353). Technical Studies applicants must contact the Assessment Center (610-359-5322).

Enrollment Opportunities for High School Students

The College's High School Dual Enrollment Pilot Program gives students the opportunity to earn college credits while they're still in high school at a fraction of the cost of standard tuition rates. Interested high school students are invited to apply, and participants are selected based on demonstrated academic ability and motivation. Accepted high school students can earn up to 21 credits at 65% off the traditional tuition pricing. To make an appointment or to discuss opportunities please contact Enrollment Management (610-359-5141) or email enroll@dccc.edu.

International Applicants

Non-immigrant students, requiring a Certificate of Eligibility (Form I-20F), must complete the College's International Student Application. In addition, they must provide the Admissions Office with an official report of their academic records of secondary and postsecondary education from a NACES (National Association of Credential Evaluation Services) approved member, and financial documentation verifying their ability to meet all educational and living expenses while studying in the U.S. For a list of approved NACES members visit www.naces.org.

The College requires both an affidavit of support and a bank statement reflecting, in U.S. dollars, the funds available to the student. This amount must minimally meet all first-year expenses.

All students entering Delaware County Community College on a student visa must purchase health insurance through the College.

International students who require a student visa must apply to the College for admission to the fall and spring semesters, as well as for summer English as a Second Language (ESL) courses. Because of the time needed to process applications for students requiring an I-20, the Admissions Office must receive application materials by the following deadlines:

July 15, for the fall semester; November 15, for the spring semester; April 15, for summer ESL courses

Current immigration regulations prohibit B and F2 visa holders from enrolling in credit courses. However, they may enroll in up to two non-credit classes each semester. They may also apply for a change of status while in the United States.

Other non-U.S. citizens seeking admission to the College, including Resident Aliens, should follow the regular application process. Please contact the Admissions Office for application materials and information:

Delaware County Community College
901 South Media Line Road
Media, PA 19063-1094 USA
610-359-5050
admiss@dcc.edu

Transferring to Delaware County Community College

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 Marple Campus (610-359-5322) or online at www.dccc.edu; or Learner Services in Exton (610-450-6510), Downingtown (484-237-6210) or Pennocks Bridge (610-869-5100), or student services at the 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 academy 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 Office of Disability Services at 610-359-5229.

Shared Programs with Bucks, Montgomery and Philadelphia 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 for courses taken at the host college. 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
Health and Fitness Professional
Medical Laboratory Technology
Engineering Technology

Offered at Community College of Philadelphia

Dental Hygiene
Chemical Technology
Interpreter Education
Photographic Imaging

For further information, contact Delaware County Community College Admissions Office at 610-359-5333. Individuals from Bucks, Montgomery and Philadelphia counties should consult their home institution's catalog for eligible programs offered by Delaware County Community College.

*Programs listed are subject to change.

OPTIONS FOR EARNING COLLEGE CREDIT

Cooperative Education (Co-op) and Internships

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 of 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. Students must check with the division dean to determine if independent study is appropriate.

NOTE: Independent study should not be confused with individualized study. Individualized study courses are those in which students work with various types of instructional support and individualized instruction. MAT 040, 060 and 100 are offered in individualized instruction mode.



Students studying in the STEM Center.

STUDENT SUCCESS

Delaware County Community College is committed to helping students achieve success in their college experience. The Student Success areas provide resources, support, and services to students as they pursue their educational objectives. It is our goal to educate students to take responsibility for their education and their lives. Our programs and services are designed to teach self-sufficiency and make students active participants 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 provides programs, resources and services designed to help enhance student success, retention, goal completion and graduation. Through its outreach, collaboration and student recognition initiatives, the office seeks to ease the college transition for new students. Through these efforts, the office also seeks to foster the educational, career, financial, leadership and personal development of students. For more information, please contact the Office of Student Success and First Year Experiences at 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 information seminars
- 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 personal concerns that may interfere with academic progress. Counseling is a walk-in service for students and an appointment is not always necessary. For information, call 610-359-5324 for the Marple Campus, 484-237-6210 for the Downingtown Campus, 610-450-6510 for the Exton Center, 610-957-5720 for the Southeast Center, 610-869-5100 for the Pennocks Bridge Campus and 610-723-1250 for the Upper Darby Center.

Students with Disabilities

Delaware County Community College welcomes all qualified students with disabilities. Students with disabilities seeking accommodations must provide current and comprehensive documentation in a timely manner. Students are required to meet with the Director of Disability Services, room 1320 in the Career & Counseling Center at the Marple Campus in order to determine appropriate accommodations. Students are responsible for picking up their accommodation letters every semester and communicating with their instructors. For more information about eligibility and documentation requirements, please contact the Office of Disability Services at 610-359-5229. Students on Branch Campuses can contact the Coordinator of Disability Services at 484-237-6251.

Assessment Services

The Assessment Center, located at the Marple Campus, provides testing services, assessment, academic advisement, and other services that support students' progress toward their academic goals. The Testing Center (610-325-2776) is located in the Academic Building on the Marple Campus.

Testing services include the College's placement tests, College Level Examination Program (CLEP), American College Testing (ACT), testing for Allied Health majors, General Education Development (GED) exams, Prometric and Pearson-Vue exams and certifications, intercollegiate exams, and make-up exams for students. The Assessment Center is also responsible for the transfer of credit from other colleges, credit for prior learning, change of major, and advisor assignment. For more information, visit www.dccc.edu/assessment or call 610-359-5322.

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, forms are available in the Assessment Center (Marple Campus) and at the Student Services or Learner Services Office at other campus locations. The form can also be downloaded at www.dccc.edu. In addition to the petition, students must have an official transcript from their previous college(s) sent 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 for College credit through the use of standardized tests or the submission of a portfolio containing certificates, transcripts and other information that documents college-level learning earned outside a formal classroom. Examples of other learning opportunities include apprenticeships, military service, and non-credit seminars. Obtaining 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 Assessment Services at (610-359-5322).

Advanced Placement

Delaware County Community College grants advanced-placement college credits to qualified students. The maximum award is 15 credit hours toward 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 subject to instructor approval. For specific score requirements, contact Assessment Services at (610-359-5322).

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

College Level Examination Program (CLEP)

It is possible for a student to earn up to 36 credits toward 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 Assessment Services at 610-359-5322 or visit the College Board website at www.collegeboard.com/dep.

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 fall and spring

semesters, the program offers professional counseling, tutoring (in reading, writing, mathematics and other subjects) and study skills workshops for program participants to promote student success. For more information contact the Act 101 Office in Room 1180, Marple Campus, at 610-359-5388 or go to www.dccc.edu.

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 and interact with a live tutor, submit writing to the online writing lab, or submit a question and receive a reply from a tutor. SMARTHINKING supports numerous subjects; for more information visit *deLaGATE*.

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 offer opportunities to 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 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 programs. The campus life office also coordinates the activities of the Student Government Association, literary magazine and theatre. Many opportunities are available 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, located on the Marple Campus (610-359-5341 or camplife@dccc.edu), can help you become engaged in a variety of activities. Students at Branch Campuses can reach us at cccampuslife@dccc.edu. For more information, visit our website: www.dccc.edu/campuslife.

Wellness, Athletics and Recreation

The Office of Wellness, Athletics and Recreation is committed to providing 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. Call 610-359-5354 for additional information.

Intercollegiate Athletics: The College offers opportunities for full-time students to participate in athletic competition at the intercollegiate level. Students may compete in any of our seven intercollegiate sports teams. This competitive program allows student-athletes to develop skills and team spirit, and encourages them to achieve their highest potential. The College is a member of the Eastern Pennsylvania Athletic Conference in Region XIX of the National Junior College Athletic Association (NJCAA). Students interested in participating in any sport should contact the Director of Wellness, Athletics and Recreation Andrew Johnson Jr. at athleticsdept@dccc.edu. The College offers the following sports: men's soccer, women's track and field, women's volleyball, baseball, basketball, cross-country and golf.

Intramural/Recreational Sports and Wellness: The intramural/recreation sports program provides opportunities for students to participate in informal recreational activities and sports competition. Our fitness center and aerobic studio, located on the Marple Campus, is open to faculty, staff and students with a current College ID. The center features free weights, circuit machines, treadmills, ellipticals and more. Aerobic classes are offered throughout the week.

Veterans Services

The College is dedicated to serving our student veterans. Our Veterans Services include assistance with financial aid applications and accessing veterans' education benefits, evaluation of military transcripts, and information and referral for college programs and services. For information about Veterans Benefits and financial aid, contact Nancy McLaughlin, Veterans Certifying Official, at 610-359-5346. For questions regarding military transcripts, and information and referral for programs and services, contact Christine Kohute in the Assessment Center at 610-359-5322.

Student Ombudsman

The student ombudsman is an impartial resource for students seeking assistance with College policy and procedures. The student ombudsman is located in Founders Hall and can be reached at 610-359-7365.

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. OIT supports and enhances the College academic areas by supporting systems, servers, desktops, iMacs, audio/visual services, and phone systems in offices, classrooms 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:

To enhance the academic experience at Delaware County Community College, academic buildings have been equipped with the latest information technology equipment available. Supporting the expanded requirements of today's demanding academic programs, students have access to high-speed computers and networked laser printers throughout the College. In addition, students have access to public computer lounges in most buildings providing powerful iMac computers for general-purpose use. Students bringing personal laptops or mobile devices to the campus can easily access Delaware County Community College systems and the Internet using the fastest wireless technology now available. All classrooms are equipped with video media systems for displaying vivid, high-quality images, presentations and movies. At the core, these computer systems are connected via ultra-speed networking equipment with access to various College computer systems and the Internet.

Support Center: The OIT Support Center is available for students to obtain computer or network information and to report any technical problems. This office can also assist with any connectivity issues using student or college-owned equipment. This office is located at the Marple Campus Room 4274, accessible at support.dccc.edu, or by phone at 610-359-5211. Students can also get assistance at the Learning Resource Centers located at our satellite campuses.

deLaGATE: The College portal is the central source of all information for students. The portal is also used for access to a number of important College systems (email, registration, WebStudy, student records, etc.). All students have access to *deLaGATE* at deLaGATE.dccc.edu.

myDCCC Mobile App: The myDCCC mobile app for Android, iOS and Kindle devices helps you stay connected to Delaware County Community College like never before. You'll have access to great features like class cancellations, course lists, grades, maps and more that make your campus experience more effective, more efficient and more fun. To learn more or to download the app, visit: www.dccc.edu/mydccc or search for myDCCC on Google Play, the Apple App Store or Amazon.

Email: The College provides all admitted students with email, which is the preferred method for all College communications. Student email is accessed through the *deLaGATE* web portal.

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.

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 three levels of 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 Education.

Learning Commons

Located at 4500 Founder's Hall (Fourth Floor)
610-359-5149

Fall and Spring Hours

Monday–Thursday 7:30 a.m. to 10 p.m.
Friday 7:30 a.m. to 5 p.m.
Saturday 9 a.m. to 4 p.m.
Sunday Closed

Website: www.dccc.edu/learning-commons

Please see the website or the Learning Commons tab in *deLaGATE* for further information on hours.

Summer Hours

Monday–Thursday, 7:30 a.m. to 10 p.m.
Friday, Saturday, Sunday - Closed

This vibrant new facility offers a student-centered environment that provides access to many academic resources and encourages opportunities for collaborative learning. Academic support services found in the Learning Commons include Library and Writing Services, Supplemental Instruction and Tutoring Services. The Learning Commons also offers a wide variety of technology including portable and assistive technologies. Students can also use quiet and collaborative study spaces (with whiteboards and computer display screens) and purchase items at a coffee bar.

All of the following services are available to active students, are supported by technology, and may be accessed on a walk-in basis or by appointment.

Library Services - Library services are offered to support the learning and research needs of students, faculty, staff and community members.

Resources - The Learning Commons collection contains approximately 30,000 items including books, DVDs, audio CDs, and other media. While the Learning Commons subscribes to over 100 periodicals in hard copy, access to an additional 20,000+ periodicals and thousands of electronic books is available online. Patrons have access to printed or e-resources, DVDs, streaming videos both on and off campus. Items not available in the College Learning Commons may be obtained through reciprocal borrowing with colleges in a tri-state area consortium or through a national inter-library loan program. Faculty, students, and staff at satellite campuses may obtain physical materials from the Marple Campus Learning Commons through an intracampus borrowing program. Please see the Learning Commons website for details on these two services.

Reference assistance is available from 8 a.m. to 9 p.m. when the Learning Commons is open for regular hours. In addition, the library website features an email reference service titled "Ask A Librarian" and a 24-hour, online chat reference service. The reference librarians have also developed a number of guides and tutorials to assist patrons. Many of these guides are available electronically through the library website or in print at the information desk.

Circulation - Printed materials and various technology may be borrowed from the Learning Commons. These include portable technology (see below), microscopes, and calculators, as well as circulating books, CDs, and DVDs.

Tutoring Services - Professional, peer and online tutoring are all available to support students in their pursuit of learning. Tutors work to create an atmosphere that is conducive to learning, self-improvement and exploration in order to encourage students to become independent, lifelong learners.

Writing Services - Services are available to help students with all phases of composition and to encourage independent thinking and writing. Faculty and professional tutors will guide students through all stages of the writing and revision process and even offer sessions on specific problem areas when necessary.

Supplemental Learning Services - By attending one or more of a variety of sessions, students have the opportunity to learn new techniques or improve skills in student success areas such as time management, study habits, note taking and networking for resources. These sessions will be presented in the Learning Commons and will be provided for groups or individually. This program will also assign tutors to specific classes so that students may gain immediate assistance in specific subject areas. For more information, please see staff at the Learning Commons information desk.

Technology Services - More than 100 computers are available for students to access all academic supports and resources. Printing, copying and scanning are also available.

Portable Technology Loan Program - Students in good standing may borrow a laptop, netbook computer, calculator or other technology from the Learning Commons with a valid ID. Computers are equipped with wireless access to the Internet only when used on campus. These laptops are acquired at the circulation desk or the Learning Commons at branch campuses and overnight and weekend borrowing is also available. Borrowing periods vary by campus. Any technology returned late, damaged or not returned at all will be charged a fee, and borrowing privileges will be revoked. Faculty may borrow portable technology through OIT only.

When using the Learning Commons all visitors should observe these guidelines:

- Please put cell phones on silent mode while in the Learning Commons – talking on cells phone while in the Learning Commons is not allowed.
- Do not leave backpacks, cell phones, other technology and valuables unattended.
- Do not disturb the research and study of other Learning Commons users.
- Keep voices low to allow for quiet study.
- Harassment of Learning Commons staff will not be tolerated.
- Do not damage Learning Commons materials or property.
- While snacks are allowed, meals are not.

Individuals who fail to observe these guidelines will be asked to leave the Learning Commons, and may face disciplinary action.

New Choices Career Development Program

New Choices is a FREE program providing career and personal development assistance to unemployed individuals, single parents, displaced homemakers, and those in transition. Small group workshops provide guidance to determine career interests, explore employment and training opportunities and prepare for success in today's job market. A non-credit "computer basics" class is included. Classes are offered in January, March and September 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 SNAP 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 the student with obtaining special allowances from the County Assistance Office, including books, transportation, child care and car repair and purchase.

The program is open to all pre-60 month TANF and SNAP 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 degree program. For more information, contact the KEYS Office at 610-359-5231.

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 two 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 12 college credits. No credit towards a degree results from basic and developmental courses.

THE LEARNING CENTERS

Mathematics - Learning Center (Room 1407)

The College now has a brand-new Mathematics Learning Center. Housed in room 1407 in the STEM Center, the new space makes it easier for students to get the individual attention they need. The Center expands upon individualized courses that the College already offers and provides computerized testing in a quiet, comfortable environment. The Center employs an Emporium Model, meaning a group of 50 students will learn at their own pace with access to two professors and tutors to help as needed.

Learning Commons at Branch Campuses

The Learning Commons at branch campus locations offer access to general computing, study areas, tutoring, test proctoring services and audio-visual materials. The Commons facilitate access to the Marple Campus library, which includes borrowing materials, using the library's online databases, coordinating Information Literacy sessions and generating college identification cards. The Commons assist students with basic software applications, as well as providing support with the computer-based processes, such as accessing the college's portal, *delGATE*, Web Study, and student email. The Commons collaborate with Learner Services in assisting students with online registration and access to career information via the Internet. Additional services may also be provided, such as directing laptop loans and facilitating course-related activities for Biology and other subjects.

For information please contact the Learning Commons at the following sites:

Southeast and Upper Darby Centers - 610-957-5725

Downingtown and Brandywine - 484-237-6224

Exton - 610-450-6516

Pennocks Bridge - 610-869-5117

Student Employment Services and Co-op Center

The Student Employment Services and Co-op Center provides comprehensive support to students and graduates seeking work by offering individual consultations and classroom presentations, information panels, resume assistance, mock interviewing, employer information and on-campus employer recruiting. Two career fairs are presented annually. Students anticipating graduation are offered comprehensive one-on-one assistance to prepare for their impending search for employment. The Delaware County Community College Online Job Board (www.collegecentral.com/dccc) provides access to all types of job openings for students and alumni. The College also offers Career Coach, an online tool designed to help students find a good career by providing the most current local data on wages, employment, job postings, and associated education and training. Visit www.dccc.edu/careercoach to access Career Coach. The Student Employment Services and Coop Center will open and maintain a file of faculty references for any student who requests one to be forwarded to a prospective employer.

The Student Employment Services and Co-op Center administers the Co-op/ Internship program which is designed to engage students directly in their area of study through paid or unpaid work/learning experiences which are done for credit. The Center also administers the Work Study program, a financial aid program that provides funding for students to work in part-time jobs located on campus or in the local community with non-profit organizations. Numerous positions are available on all Delaware County Community College campuses as well as in Delaware, Chester and Philadelphia Counties. Many of these jobs provide students with work experience in their field of study. For more information about the Center, please visit Room 1305 on Marple Campus, or call 610-359-5304.



An HVAC student works in the College's Advanced Technology Center.

TUITION AND FEES

The following represents the tuition and fees for the 2014-2015 academic year. For future years, these amounts are subject to change based on the recommendations of the College's Board of Trustees.

Tuition

	Per Credit Hour
Residents of sponsoring school districts	\$106
Pennsylvanians residing in an area that does not sponsor a community college	\$212
Non-Pennsylvania residents	\$318
THE COLLEGE RESERVES THE RIGHT TO CHANGE WITHOUT NOTICE THE TUITION AND FEES HEREIN STATED. (Tuition and fees do not include the cost of text books.)	

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 \$42, \$47 or \$52 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 nonsponsors who live in Pennsylvania is \$3 per credit hour. Plant fee for out-ofstate students and international 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 (non-refundable)

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 nonimmigrant visas. This fee is used to support services for international students at the College.

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 at the cashier's windows. Online payments can be made through delaGATE with a credit card or electronic check (student ID and password required). 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 Bills

Tuition bills and schedules are sent via the College's student email system. Students can access their student email through deleGATE. The College does not mail bills and schedules.

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 enrollment) 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:

Time of Withdrawal During Semester	% Rate for Refund
Before the start of classes.	100%
(0% of class time*)	
Before end of one week of classes	80%
(7% of class time*)	
Before end of two weeks of classes	
(15% of class time*)	60%
Before end of three weeks of classes	
(20% of class time*)	40%

*Refund for summer sessions, special sessions and all irregularly scheduled sessions and courses is determined by the percentage of class time elapsed. Students who must officially withdraw from the College within the first three weeks of classes (or 20% of class time) 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) will receive a refund according to the schedule above. In addition, that student will be given a credit for the balance of tuition paid to 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).

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

How to Apply for Financial Aid

All students are encouraged to apply for financial aid, which can minimize the need to overextend work hours while enrolled in classes and support successful goal completion. Aid is awarded for an academic year, covering the period from July 1 through June 30. With planning and consultation with the Financial Aid Office, students' aid can cover summer sessions in addition to the fall and spring semesters.

Step 1: Apply for admission to Delaware County Community College: www.dccc.edu/admissions-and-financial-aid and complete a Free Application for Federal Student Aid (FAFSA) www.fafsa.ed.gov. The College's School Code Number is 007110.

Financial aid recipients must be admitted to an approved academic program. All College associate degree programs and most certificate programs are approved for federal aid, and all associate degree programs are also approved for Pennsylvania state aid.

Applying for financial aid is best done electronically over the Internet. Students and parents of dependent students must apply for a PIN (www.pin.ed.gov) which represents your signature on both the FAFSA and Master Promissory Note if securing a Federal Direct Loan.

Step 2: Log on to the College's portal, delaGATE, and select the Financial Aid tab to check on the status of your financial aid application and obtain further instructions or important information required to complete the process. Checking delaGATE frequently is extremely important to be sure you do not overlook any details needed for finalizing your application.

Step 3: Do an online nationwide scholarship search at www.educationplanner.com. Also, check the College's scholarship page for institutional scholarships for which you might be eligible at www.dccc.edu/scholarships.

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.
- 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.

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:

$$\text{Cost of Education minus Expected Family Contribution (EFC)} \\ = \text{Demonstrated Need}$$

Cost of Education is calculated by academic year, two semesters (fall and spring), on the basis of full-time enrollment, and can be viewed on your delaGATE account. 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 submitted on the 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 post the student's eligibility on *delGATE*, the College's internet student portal. Students may not be enrolled concurrently in any other college or university.

Statement of Satisfactory Academic Progress Policy for Delaware County Community College 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, NR, FA or NPA. 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 (subject to revision in 2014-2015):

- 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.

Reestablishing Satisfactory Progress

A student who has not met either requirement (1 or 2 listed above) may reestablish his/her eligibility to receive federal financial assistance by enrolling at the College at his/her own expense and completing a sufficient number of courses at a sufficiently high grade point average to meet the standards. To be reinstated, a student must submit a letter of appeal (see below). Classes taken at other colleges or universities will not be taken into consideration for the purpose of financial aid reinstatement.

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 insure that a student receiving a Pennsylvania State Grant has met the Pennsylvania Higher Education Assistant 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 funds are: the Federal Pell Grant, Federal SEOG Program, Federal Work/Study Program, and the Direct 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 these courses.

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.
- Or if the student does not follow the College's official withdrawal process nor provide satisfactory official notification of withdrawal, then the date of withdrawal shall be set as the mid-point of the payment period.

The calculation of amount of federal 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. The amount not earned must be returned to the U.S. Department of Education.
- 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 Direct Loan
- Subsidized Direct Loan
- Federal Pell 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. Delaware County Community College will tell you the amount you are eligible for on your award notification on *delGATE*.

Grants for the 2012-2013 award year (July 1, 2012 to June 30, 2013) will be between \$200 and \$5,550. 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 Notification 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 (1 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 \$500 and \$1000 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 2014-2015 may receive up to \$2,400 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 \$1,200. 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
- Be taking at least 50% of coursework through classroom instruction

Application procedure and deadlines:

To be eligible a student must file a Free Application for Federal Student Aid (FAFSA) by the appropriate date:

- May 1 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 1 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 visit www.pheaa.org/index.html.

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.

Federal Direct Loan

A student loan is a serious obligation that must be repaid. We encourage you to carefully consider the amount of loan funds you request—please borrow wisely! Direct Loans are low-interest loans for students and parents to help pay for the cost of a student's education after high school. The lender is the U.S. Department of Education, though the entity you deal with, your loan servicer, can be a private business. With Direct Loans you:

- Borrow directly from the federal government and have a single contract—your loan servicer—for everything related to repayment, even if you receive Direct Loans at different schools.
- Have online access to your Direct Loan account information via your servicer's website.
- Can choose from several repayment plans that are designed to meet the needs of almost any borrower, and you can switch repayment plans if your needs change.

Visit www.direct.ed.gov/student.html or delagATE for more information.

Federal Direct Loan Disbursement

All Federal Direct 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.

When your funds arrive we will send you a 'Notice of Disbursement' 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 14 DAYS OF THE DATE OF THIS DISBURSEMENT.** To cancel you must submit written notification to the Financial Aid Office on the Marple Campus 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 fourteen days after your account is credited, or fourteen

days after the beginning of the semester, whichever is greater and mail it to your permanent address.

These processes apply whether the loan is subsidized or unsubsidized.

Disbursement dates may be affected by the time that the application process is completed. You may not receive Direct Loan funds from two schools in the same semester or term.

Subsidized Direct Loan vs. Unsubsidized Direct Loan

Eligibility for a Subsidized Direct 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 Direct Loan while they are in school as at least a half-time student.

For the Unsubsidized Direct 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 Direct Loan the student is expected to pay the interest while the student is enrolled.

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.

For more information about the Federal PLUS Loan Program visit www.studentaid.ed.gov or www.pheaa.org or call the Financial Aid Office at 610-359-5330 and request The Student Guide booklet.

Other Financial Aid Programs

Veterans' Benefits

Delaware County Community College is approved for veterans' 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 visiting 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. For more information visit 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 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 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 Delaware County Community College Educational Foundation or the Financial Aid Office. Examples of scholarships include:

ACCA Endowed Scholarship
Act 101 Scholarship
John Russell Agar Nursing Scholarship
Allied Health, Emergency Services and Nursing Scholarship
Alpha Delta Kappa Scholarship
American Association of University Women Scholarship
American Foodservice Corporation Endowed Scholarship
American Association of University Women Scholarship (Valley Forge Chapter)
Thomas J. Anderson Scholarship
David J. Andrien Memorial Scholarship
David Baldwin Memorial Endowed Scholarship
Barday Square/Park Lane Apartments Scholarship
Beneficial Bank Scholarship
Marc A. Bender Endowed Scholarship
Big Poppa's Helping Hand Scholarship
Bishop Dillon Stearly Scholarship
Boeing Scholarship Program
Denis A. Cannon Scholarship
Thewinco Leela Caesar Memorial Scholarship
Cannon Mini Self Storage Scholarship
Dr. John T. Carroll Memorial Endowed Scholarship
Chester Pike Rotary Club Endowed Scholarship
Jonathan C. Coia Memorial Scholarship
Kevin T. Coleman Memorial Endowed Scholarship
Compass/Canteen Scholarship
Madalene Hayes Conner Scholarship
Charles W. Crist Memorial Endowed Scholarship
Connect to the Future Scholarship
Cumberland Insurance Group Scholarship
Anthony D'Angelo Business Society Scholarship
DCCC Alumni Legacy Scholarship
DCCC Educational Foundation Scholarship
DCCC Memorial Scholarship
DCCC Psychology Faculty Scholarship

DCCC Student Government Association Scholarship
Deans' Scholarship
Richard D. DeCosmo Presidential Scholarship
Delaware County Tavern Association Endowed Scholarship
Delaware County Sheriff's Scholarship
Maryann DiGiandomenico Memorial Scholarship Fund
Dollars for Scholars Scholarship
Donnelly-Barnes Scholarship
The Dream Today Scholarship
Drexelbrook Community Scholarship
Eastern Delco Business and Professional Women's Club Scholarship
Eganey Kauffman Memorial Scholarship
Eisenman-Sebastian Scholarship
Ellucian Scholars Award
Matt Evoli Scholarship
J.R. Finio & Sons Endowed Scholarship
Dolores Finnigan Memorial Scholarship
Flora Music Scholarship
The Jonathan Phillip Ford Memorial Scholarship
Teresa K. Freda Endowed Scholarship
General Federation of Women's Clubs Scholarship
D. Barry Gibbons Scholarship
John and Loretta Glavin Family Scholarship
Glen Riddle Rotary Scholarship
The Gureghian Family Scholarship
Marie T. Haindl Memorial Scholarship
George and Anna Hall Memorial Scholarship
Harrah's Scholarship
Timothy Finian Hickey Memorial Endowed Scholarship
Patricia Holsten Scholarship
Independence Blue Cross Nurse Scholars Program
Independence Foundation Endowed Nursing Stipend Fund
Henry J. Jackson Memorial Scholarship
Frank and Mary Jelinek Endowed Scholarship
Professor Michael R. Johnson Business Internship Scholarship
Edward M. Kavjian, M.D. Scholarship
Amber Smitham Knox Scholarship
Ourania Kontopoulos Endowed Memorial Scholarship
Kreitzberg Family Endowed Scholarship
Kuehner-Oyler Endowed Nursing Scholarship
John Lazarich Foundation Nursing Scholarship
Harry L. Le Fever Scholarship
Connie Lippard Memorial Scholarship
The Bob Luksa Memorial Engineering Scholarship
Brian J. Maguire Memorial Scholarship
Ellen and Paul Makowski Scholarship
The Malvern School Scholarship
March of Dimes Scholarship
Masterson Family Scholarship
Carolyn M. McKinley Scholarship
Thomas P. McNicholas Scholarship
Monarch Staffing Scholarship
Brian J. Maguire Memorial Scholarship
Michael and Teresa Morochko Endowed Scholarship
Murphey Family Memorial Endowed Scholarship
Nazira Simone Obeid Scholarship
Steve P. Pahides Endowed Business Scholarship
Jenny Ann Parton Memorial Scholarship
Pennsylvania Machine Works Manufacturing Scholarship
Priscilla Fox Pfizenmayer Communications Arts Endowed Scholarship
Phi Theta Kappa Undergraduate Endowed Scholarship
Phil-Hanna Memorial Scholarship

Phoenixville Sponsored Students Scholarship
 Ellen Ann Roberts Scholarship
 James F. and Sadie Rooney Scholarship
 Dr. Jane Rothrock Scholarship
 Dennis Ryan-Paul Motta Memorial Endowed Scholarship
 SAP Endowed Scholarship for Business and Technology
 Louis W. Scott III Memorial Scholarship
 Shames Reading Scholarship
 Labron K. Shuman Most Improved Award
 Meghan E. Smith Scholarship and Discretionary Fund
 Social Work & Human Service Faculty Scholarship
 Soroptimist Allied Health Scholarship
 Soroptimist New Choices Scholarship
 Southco Scholarship
 Sovereign Bank STEM Scholars Program
 Spelina-McAfee Memorial Scholarship
 Sunoco Scholarship
 Charles Sweeney Memorial Endowed Scholarship
 Sweet Future Scholarship
 Robert Wetherill Trainer Scholarship Fund
 Ann Marie Vitale Memorial Scholarship
 Sam Walker Scholarship
 Phyllis Wexler Memorial Endowed Scholarship
 Wong Moss Scholarship
 Wyman's Well Scholarship

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 \$1,000 of out-of-pocket expenses plus 50% of the next \$1,000 of out-of-pocket expenses, up to a maximum of \$1,500 per year per student.

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 www.irs.gov.

Flexible Payment Options

Delaware County Community College accepts American Express, 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, high school dual enrollment students and students enrolled in non-credit courses are not eligible for the tuition payment plan.



Students enjoy a new computer lab and lounge in the Academic Building.

GRADING SYSTEM

Letter grades will be distributed on delaGATE 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).

Letter Grades	Meaning	Grade Points Per Semester
A	Excellent	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failing	0
FA	Failing for lack of attendance	0

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 College 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 coursework 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 "F" 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.
NPA No Pass	Lack of attendance.

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

IN PROGRESS GRADE FOR INDIVIDUALIZED COURSES ONLY

IP In Progress	Only students enrolled in individualized classes may receive the IP grade. Students receiving this grade have partially met course requirements in a satisfactory manner but must re-register and pay the tuition in order to complete the course. If the student does not register and successfully complete the course in the following semester, excluding summer sessions, the IP grade will change to an NP grade.
W Withdraw	The grade given to a student who is authorized to withdraw from a course during the authorized withdrawal period. This grade is also given when an instructor withdraws a student for poor attendance.

T Transfer	The grade is given for a course that is transferred into the College.
CR Credit	Credit awarded for passing courses by assessment.
NR No Record	Grade not reported by instructor.

Developmental and transitional courses will be awarded the following grades: HP, P, IP, NP, NPA, 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 coursework 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 Student Handbook 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 website.

PLANNING TO TRANSFER

Many Delaware County Community College students transfer to four-year colleges and universities. 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 transferable credits).

Each year over 1,200 Delaware County Community College students transfer successfully to hundreds of colleges and universities throughout the United States. It is important to begin planning for transfer as soon as you enroll at the College. Many courses you take at the College will fill general education requirements for graduation at your transfer school. 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 Delaware County Community College students, transfer advisors and a wealth of other information to assist you.

In particular, the College has Dual Admission and Core-to-Core transfer agreements with a variety of colleges and universities within the Philadelphia, Delaware and Chester County areas. These programs were 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., A.F.A. or A.A.S. degree from the College and meet the minimum GPA requirement. Students who choose to participate in the Dual Admission program receive distinct advantages, such as waived application fees, scholarship eligibility, and invitations to collegesponsored events. An Intent to Enroll form must be completed before the completion of 30 transferable credits. The colleges and universities that offer Dual Admission programs at Delaware County Community College are Albright College, Alvernia University, Arcadia University, Cabrini College, Chestnut Hill College, Delaware Valley College, Eastern University, Immaculata University, La Salle University, Neumann University, Peirce College, Rosemont College, Saint Joseph's University (Traditional Day and College of Professional & Liberal Studies), Temple University, West Chester 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. Students may take advantage of the Core-to-Core program with Albright College, Arcadia University, Cabrini College, Chestnut Hill College, Delaware Valley College, La Salle University, Peirce College, Temple University and West Chester University.

In addition to Dual Admission programs, the College has special partnerships with other universities. Strayer University, Villanova University and Wilmington University offer a Guaranteed Admission program. These programs guarantee admission to the university, provided all requirements are met.

Twenty programs are specifically designed to parallel the first two years at a four-year college or university: Business Administration, Communication Arts, Computer Information Systems, Computer Science, Early Childhood Education, Education, Engineering, English, Global Studies, Graphic Design, History, Human Service, Liberal Arts, Mathematics and Natural Science, Photography, Psychology, Science for Health Professions, Social Work and Sociology. 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.

Visit the Transfer Office website at www.dccc.edu/transfer for more information. You can contact the Transfer Office in the Career and Counseling Center on the Marple Campus, at 610-359-5060. Transfer Services at Exton can be reached at 610-450-6510 and 484-327-6210 for the Downingtown campus; 610-957-5700 for the Southeast Center campus; 610-723-1250 for the Upper Darby Center; or 610-869-5100 for Pennocks Bridge Learner Services.



TransferCheck

TransferCheck is a web-based application developed exclusively for the College. It assists students in smoothly completing and then transferring a Delaware County Community College associate degree to a local four-year college or university.

Prospective students can use the application to explore agreements with area colleges and universities and see what programs and majors offer a seamless transition from the College to area four-year institutions.

Current students can stay on track with their progress toward degree completion and transferring credits by running a real-time progress check with their delaGATE login credentials to see their courses applied to specially selected agreements.

Visit www.dccc.edu/transfercheck to access the application.

PA TRAC

Statewide Program-to-Program (P2P) Agreements allow students who graduate with specified associate degrees to transfer as juniors into bachelor degrees in similar fields of study at designated public four-year institutions. P2P Agreements serve as pathways into undergraduate majors at participating four-year institutions and help minimize loss of credits when transferring from one institution to another. To search for Statewide P2P Agreements that may apply to you, visit: www.patrac.org

COLLEGE AND UNIVERSITY TRANSFER PROGRAMS

Administration of Justice, Associate in Arts (AADJ)

The Administration of Justice curriculum is designed to meet the needs of current and prospective students interested in transferring to a four-year institution for the purpose of receiving a Bachelor's Degree in Administration of Justice/Criminal Justice and that students will have a smooth transition from the College to the four-year institution of their choice.

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

- Differentiate between the three main segments of the Criminal Justice System.
- Distinguish between the different types of crime causation while applying the major theories of criminology.
- Identify the generalized components which have impacted the Juvenile Justice System in the United States.
- Compare and contrast the major ethical issues facing Criminal Justice professionals with an emphasis on encouraging students to explore their own ethical and moral systems.
- Illustrate the role of technology in the Administration of Justice.
- Demonstrate critical thinking on issues of social diversity.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
ADJ 101 - Introduction to Criminal Justice	3
MAT 120 - Modern College Mathematics	3
COMM 111 - Public Speaking	3
PSY 140 - General Psychology	3

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
ADJ 241 - Criminal Law, Procedure and Adjudication	3
SOC 110 - Introduction to Sociology	3
ADJ 120 - Principles of Investigation	3
PSY 220 - Abnormal Psychology or	
PSY 225 - Experiences in Diversity	3

Third Semester (16 credits)

Courses	Credits
ADJ 225 - Ethics in Criminal Justice	3
ADJ 250 - Contemporary Police Services	3
ADJ 240 - Criminology	3

Electives

- Humanities Elective - 3 credits
- Laboratory Science Elective - 4 credits

Fourth Semester (16 credits)

Courses	Credits
ADJ 260 - Corrections-Probation-Parole	3
POL 120 - American National Government	3
ADJ 261 - The Youthful Offender	3

Electives:

- ADJ Elective - 3 credits
- Laboratory Science Elective - 4 credits

Notes

ADJ Electives: Choose one:

ADJ 202 - Terrorism

ADJ 203 - Contemporary Issues in Criminal Justice

ADJ 223 - White Collar Crime

ADJ 280 - Organized Crime

Total Credits: 62

Behavioral Science - Anthropology, A.S. (BANT)

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 for those who plan 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 sociology 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.

Required Courses

Required Courses	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
HIS 150 - World Civilization I	3
HIS 160 - World Civilization II	3
COMM 100 - Introduction to Interpersonal Communication	3
PSY 140 - General Psychology	3
SOC 110 - Introduction to Sociology	3
SOC 215 - Experiences in Diversity	3
SOC 180 - Sociology of Marriage and The Family	3
SOC 210 - Cultural Anthropology	3

Required Electives:

- Humanities Elective 9 Credits
- Lab Science Elective 8 Credits
- Mathematics Elective 6-10 Credits
- Open elective 3 Credits

Program Electives

Program Electives	Credits
HUM 160 - Introduction to World Religions	3
HUM 171 - Western Myths	3

HUM 173 - Eastern Mythology	3
SOC 240 - Human Geography	3

Notes:

Choose only 2 courses from HUM 160, HUM 171, HUM 173, SOC 240

Total Credits: 62 - 66

Business Administration - General Business, A.S. (BUAD)

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. This curriculum is fully compliant with Pennsylvania Statewide Program-to-Program Articulation Agreement (TAOC) as promulgated by the Pennsylvania Department of Education. This Agreement assures that the BUAD student can transfer their full degree into a baccalaureate program at a participating Pennsylvania affiliated institution, transferring with full Junior class standing. (This includes all PASSHE institutions) Transfer Students in this program may emphasize accounting, marketing or sport management, by following the guidelines below. Students enrolled in BUAD are strongly recommended to choose their transfer school as soon as a practical, then consult that institution, their BUS Division Faculty Advisor or the DCCC Transfer Office to ensure that their course of study will be consistent with the requirements of their transfer institution. 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 discussions about business.
- Use computer terminology when discussing business computer applications.
- Demonstrate fundamental software, applications skills in word processing, spreadsheets, presentation software, database management, communication, and research.
- 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.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
DPR 100 - Introduction to Information Technology	3
BUS 100 - Introduction to Business	3
ACC 111 - Financial Accounting	3

Electives

- HUM elective (3 credits)

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
ECO 210 - Macroeconomic Principles	3
MAT 135 - Business Precalculus	3
ACC 112 - Managerial Accounting	3
BUS 230 - Principles of Marketing	3

Third Semester (15-16 credits)

Courses	Credits
ECO 220 - Microeconomic Principles	3
BUS 243 - Legal Environment of Business	3
BUS 210 - Principles of Management	3

Electives

- BUS or Open Elective (3 credits)
- Science Elective (3-4 credits)

Fourth Semester (16 credits)

Courses	Credits
MAT 136 - Business Calculus	3
BUS 220 - Elementary Statistics	3

Electives

- HUM Elective (3 credits)
- BUS or Open Elective (3 credits)
- Science Elective (4 credits)

Notes:

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 130 and 131, MAT 140 and 141 or MAT 160 and 161. Most four-year colleges prefer the MAT 130 and MAT 131 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.

Total Credits: 61-62

Guidelines for Areas of Concentration:

Accounting: Students interested in focusing on accounting should take ACC 115, Computerized Accounting and BUS 232, Principles of Finance, as electives.

Sport Management: Students interested in focusing on Sport Management should take BUS 212, Introduction to Sport Management, as a substitute for BUS 100 and BUS 236, Sport Marketing, as a substitute for BUS 230; BUS 100 and BUS 230 should not be taken by Sports Management students.

Marketing: Students interested in focusing on Marketing should take BUS 231 as an elective.

Notes:

Business electives for the BUAD degree should be chosen from the following courses: ACC 210, BUS 101, BUS 111, BUS 130, BUS 199, BUS 212 (only as substitution for BUS 100), BUS 214, BUS 215, BUS 218, BUS 231, BUS 236 (only as substitution for BUS 230), BUS 246, DPR 105).

In general, ECO 210 and 220 are transferred as Social Science courses, satisfying a requirement in that discipline. Some transfer institutions may transfer them as BUS courses, in which case students should consider taking 6

credits of Social Science electives to satisfy the General Education Social Science requirement at their transfer institution.

The BUAD curriculum is generally consistent with transfer institutions whose Business curricula are accredited by the American Assembly of Collegiate Schools of Business (AACSB). Students should check with their advisor or the Transfer Office for a list of these schools.

Under special circumstances, alternative courses may be permitted, either as required courses or elective courses, when recommended by the advisor and approved by the Dean, business/computer information systems.

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

Communication Arts , A.A. - Journalism Option (JOUR)

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.

All 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 successful 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 moral and ethical responsibilities inherent in the application of communication theory across a variety of contexts.
- Gain an understanding of the general theory and practices of mass communication including explaining media forms.

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

Program Options

This option is intended to prepare students for a career in print media field. Students contemplating a career in newspaper writing, photojournalism, public relations, and newswriting for the electronic media should select this option.

Students wishing to take Interactive Multimedia (IMM) courses should take DPR 100 (Introduction to Information Technology) or DPR 108 (Introduction to Computer Science) as an open elective in their first and second semester.

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

ENG 130 - Fundamentals of Journalism (Required)
 ENG 131 - Fundamentals of Journalism (Required)
 ENG 205 - Creative Writing
 COMM 115 - Introduction to Public Relations
 ART 102 - Digital (SLR) Photography I
 ART 103 - Digital (SLR) Photography II
 ART 235 - Digital (SLR) Photography III
 IMM 110 - Multimedia Graphics and Design
 IMM 120 - Web Page Development
 IMM 201 - Audio and Video for Multimedia

First Semester (15-17 credits)

Courses	Credits
ENG 100 - Composition I	3
COMM 100 - Introduction to Interpersonal Communication	3
HIS 130 - Western Civilization I	3

Electives

- Humanities or Foreign Languages (3 credits) strongly recommended
- Science or Mathematics Elective (3-5 credits)

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
HIS 140 - Western Civilization II	3
COMM 104 - Introduction to Mass Communication	3

Electives

- Open requirement or Option Elective (3 credits)
- Humanities or Foreign Language (3 credit)

Third Semester (15-17 credits)

Electives

Option Requirements or Option Electives	(6 credits)
Humanities or Foreign Languages Elective	(3 credits)
Social Science Elective	(3 credits)
Science or Mathematics Elective	(3 - 5 credits)

Fourth Semester (15-17 credits)

Electives

Option Requirement or Option Electives	(3 credits)
Humanities or Foreign Language Elective	(3 credits)
Social Science Elective	(3 credits)
Science or Mathematics Elective	(3 credits)
Open Elective (3 credits)	

Required Courses

Required Courses	Credits
ENG 130 - Fundamentals of Journalism I	3
ENG 131 - Fundamentals of Journalism II	3

Program Electives

Program Electives	Credits
ENG 205 - Creative Writing	3
COMM 115 - Introduction to Public Relations	3
ART 102 - Digital (SLR) Photography I	3
ART 103 - Digital (SLR) Photography II	3
ART 235 - Digital (SLR) Photography III	3
IMM 110 - Multimedia Graphics & Design	3
IMM 120 - Web Page Development	3
IMM 120 - Web Page Development	3
BUS 231 - Principles of Advertising	3

Notes:

ENG 130 and ENG 131 are required for the Journalism Option. Select 2 courses (6 credits) from the above list to meet the remainder of the Journalism Option requirements.

Students wishing to take Interactive Multimedia (IMM) courses should take DPR 100 (Introduction to Information Technology) or DPR 108 (Introduction to Computer Science) as an open elective in their first and second semester.

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

Total Credits: 60-66

Communication Arts, A.A. - Communication Studies Option (COMM)

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.

All Communication Arts students are required to take the general education 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.

Upon successful 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 moral and ethical responsibilities inherent in the application of communication theory across a variety of contexts.
- Gain an understanding of the general theory and practice of mass communication including explaining media forms.

Program Options

Students electing the Communication Studies Option will focus their studies on how people use messages to generate meaning. These messages are studied in a variety of contexts, cultures, and media. The degree option is designed to prepare students for further study at the baccalaureate level and/or for career enhancement. Students select from the following courses to meet the Communication Studies Option requirement: 12 credits

Choose two of the three courses below (6 credits):

COMM 111 Public Speaking or

COMM 102 Intercultural Communication or

COMM 105 Small Group Communication

Choose any two courses from this list (6 credits)

COMM 115 Introduction to Public Relations

COMM 200 Argumentation and Debate

HUM 141 Film Language

HUM 142 American Cinema

BUS 230 Principles of Marketing

BUS 231 Principles of Advertising

Apart from the courses taken to fulfill the degree option, students may select from the above courses to meet humanities and open elective requirements.

First Semester (16 credits)

Courses	Credits
ENG 100 - Composition I	3
COMM 100 - Introduction to Interpersonal Communication	3

Electives

- HIS Electives - select from HIS 110, 120, 130, 140, 150 or 160 - 3 credits
- Humanities - foreign language recommended - 3 credits
- Laboratory Science - 4 credits

Second Semester (15-16 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3

Electives

- HIS elective - select from HIS 110, 120, 130, 140, 150 or 160 - 3 credits
- MAT 100, 120 or above - 3-4 credits
- Open Requirement or Option Elective 3
- Humanities (foreign language recommended) 3 credits

Third Semester (15-16 credits)

Courses	Credits
COMM 104 - Introduction to Mass Communication	3

Electives

- Option Requirements or Option Electives 3 credits
- Humanities (foreign language recommended) 3 credits
- Social Science Elective - 3 credits
- Math/Science Elective - 3-4 credits

Fourth Semester (15 credits)

Electives

- Option Requirements or Option Electives - 6 credits
- Humanities foreign language recommended - 3 credits
- Social Science Elective - 3 credits
- Open Elective - 3 credits

Required Courses

Required Courses	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
COMM 100 - Introduction to Interpersonal Communication	3
COMM 104 - Introduction to Mass Communication	3

Notes:

HIS Electives:

Choose two from HIS 110, 120, 130, 140, 150 and 160 (6 credits)

Humanities Elective

(Foreign Language courses strongly recommended) (12 credits)

MAT 100, 120 or above (3-4 credits)

Laboratory Science (4 credits)

Math/Science Elective (3-4 credits)

Social Science Electives (6 credits)

Open Elective (3 credits)

Total Credits: 61-63

Communication Arts, A.A. - Theatre Option (THEA)

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.

All Communication Arts majors take 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 successful 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 moral and ethical responsibilities inherent in the application of communication theory across a variety of contexts.
- Gain an understanding of the general theory and practice of mass communication including explaining media forms.

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

DRA 100 Introduction to Theatre (Required)
 DRA 110 Acting I (Required)
 DRA 111 Acting II
 DRA 105 Acting Shakespeare
 DRA 113 Introduction to Educational Theatre
 DRA 116 Stagecraft
 DRA 130 Voice and Management
 ENG 222 Introduction to Shakespeare
 HUM 141 Film Language
 HUM 142 American Cinema
 MUS 127 Survey of American Musical

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

Required Courses	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
COMM 100 - Introduction to Interpersonal Communication	3
COMM 104 - Introduction to Mass Communication	3
MAT 100 - Intermediate Algebra	3

Notes:

HIS Electives: Choose two from : HIS 110, 120, 130, 140, 150 and 160 - 6 credits
 MAT 100, 120 or above - 3-4 credits
 Social Science Electives: 6 credits

Total Credits: 60-66

Computer Science, A.S. (CIS)

Computers have had a dramatic effect on today's society and influence almost every aspect of business, science, engineering, media broadcasting, education and social life. Computing will continue to grow and offer a wide range of career opportunities. The Computer Science 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 the computer science field. This curriculum is fully compliant with Pennsylvania Statewide Program-to-Program Articulation Agreement (TAOC) as promulgated by the Pennsylvania Department of Education. This Agreement assures that the Computer Science student can transfer their full degree into a baccalaureate program at a participating Pennsylvania affiliated institution, transferring with full junior class standing. (This includes all PASSHE institutions.) Students enrolled in this degree are strongly encouraged to choose their transfer school as soon as practical, then consult that institution, their Faculty Advisor or the DCCC Transfer Office to ensure that

their course of study will be consistent with the requirements of their transfer institution. The Associate in Science degree is awarded at the completion of the program.

- Implement algorithms and data structures using fundamental programming skills
- Identify and use current industry standards in the field of computer science.
- Apply analytical skills to assess how to solve problems.
- Understand the importance of interpersonal communication skills, team skills and the dynamics of collaboration in problem solving.
- Understand and apply the process of software development including design, implementation, documentation and testing.
- Describe the professional, cultural, legal and ethical issues related to computer science.
- Identify career paths available in computer science and determine professional education and training standards.

First Semester (17 credits)

Courses	Credits
ENG 100 - Composition I	3
MAT 160 - Calculus I	5
DPR 100 - Introduction to Information Technology	3
DPR 108 - Introduction to Computer Science	3

Electives

- Social Science elective (3 credits)

Second Semester (15 credits)

Courses	Credits
NET 110 - Network Communications	3
MAT 161 - Calculus II	5
ENG 112 - English Composition II: Writing About Literature	3
DPR 226 - Object Oriented C++	4

Third Semester (17 credits)

Courses	Credits
DPR 212 - Data Structures & Algorithms	4

Electives

- Science/Lab Elective - 4 credits
- Humanities Elective/Social Science Elective - 3 credits
- Social Science Elective - 3 credits

Notes

Business/Mathematics Elective: Choose from BUS 220, MAT 210 or MAT 230 - 3 credits

Fourth Semester (17-18 credits)

Courses	Credits
DPR 205 - Introduction to Java Programming	4

Electives

- Science/Lab Elective - 4 credits
- Humanities Elective - 3 credits
- Humanities Elective - 3 credits

Notes

DPR Elective: DPR, IMM or NET elective - 3-4 credits

Total Credits: 66-67

Early Childhood Education, A.A. (ECED)

The Early Childhood Education program of study prepares students to work with young children in a variety of early care and education settings. Settings include childcare programs for children ages 6 weeks to 5 years, school age programs, nursery schools, Head Start, Montessori schools, faith based preschool programs, public schools, hospitals and early intervention.

Graduates will be able to provide high quality educational environments that are inclusive of all children ages birth to 9. They will gain the necessary knowledge and skills to provide a developmentally appropriate, culturally response and inclusive early learning experience.

This program of study will also prepare the student to transfer to a 4 year institution to earn a Bachelor's degree and teacher certification, Prekindergarten through 4th grade.

Students will be required to have Pennsylvania Child Abuse Clearance, Pennsylvania Criminal Clearance, FBI clearance and documentation of current immunizations and TB screening.

The Early Childhood Education program at Delaware County Community College is accredited by the National Association for the Education of Young Children as an early childhood professional preparation program.

Graduates will be awarded the Associate in Art in Early Childhood Education.

Upon successfully completing of course requirements, students should be able to:

- Comprehend the practical aspects of education, including governance, politics, funding, law, psychology, and philosophical and social effects.
- Integrate knowledge of child development, families/communities, and assessment to design, implement and evaluate environments that are developmentally appropriate, educationally focused, respectful, supportive and challenging for all children.
- Identify and evaluate the impact of family, community and culture in the development of the young child and use this knowledge to build respectful and reciprocal relationships with families and the community that supports their active participation in children's development and learning.
- Recognize the importance of life long learning and demonstrate knowledgeable, reflective and critical perspectives on their work.
- Identify and evaluate materials, equipment and activities based on knowledge of early childhood pedagogy that provides an inclusive, responsive, safe and healthy learning environment for all children.
- Employ developmentally appropriate assessment techniques to plan for children's educational needs, curriculum development and program planning and to communicate findings with parents and other professionals.
- Design a meaningful and challenging curriculum that demonstrates an integration of essential concepts, inquiry tools and structure in the curricular areas that promotes children's development and learning.
- Evaluate appropriate resources to plan instruction based on students' needs.
- Demonstrate attitudes implicit in building positive and supportive relationships with children that form the foundation for effective teacher/child interactions.
- Develop the ability to evaluate, analyze, and synthesize ideas from a variety of sources to formulate a preventative model of classroom management.
- Manifest a responsible and professional attitude toward career goals and adhere to the ethical standards of the profession.
- Develop an understanding of teaching as a career choice, including job requirements, responsibilities, advantages, disadvantages and lifelong learning

First Semester (16 credits)

Courses	Credits
ENG 100 - Composition I	3
ECE 100 - Principles of Early Childhood Education or	
EDU 110 - Introduction to Teaching	3
ECE 112 - Developing a Professional Portfolio and Resource File for ECE	1
ECE 130 - Early Childhood Development	3

Electives

- Humanities Elective - 3 credits
- History Elective (HIS) - 3 credits

Second Semester (16-17 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
ECE 120 - Early Childhood Education Laboratory I or	
EDU 215 - Theory and Field Experience In Elementary Education, Pk-4	4
ECE 140 - Curriculum Development Program	
Planning and Instruction in Early Childhood Education	3

Electives

- Sociology/Psychology Elective (SOC, PSY) 3 credits
- Science Elective (ESS, BIO, CHE, PHY, SCI) 4 credits

Third Semester (15 credits)

Courses	Credits
EDU 220 - Introduction to Special Education	3
ECE 110 - Infant/Toddler Care and Education or	
EDU 207 - Foundations of Literacy PK4	3
ECE 111 - Methods and Materials for Teaching II	3

Electives

- ENG Literature Elective 3 credits
- Mathematic Elective (MAT 120 or above) 3 credits

Fourth Semester (16 credits)

Courses	Credits
ECE 201 - Children Families and Community	3
ECE 121 - Early Childhood Education Laboratory II	4
EDU 208 - English Language Learners	3

Electives

- Mathematics Elective (MAT 120 or above 3 credits
- Humanities Elective 3 credits

Total Credits: 63-64

Students wishing to transfer to a 4-year institution to earn PreK-4th grade teacher certification should choose the general education electives based on the requirements of the transfer institution.

Students who plan to work in a birth to 5 years early care and education environment should take ECE 100, 110 and 120. Students who plan to teach in grades K-4 should take EDU 110, EDU 215, and EDU 207.

English literature elective includes: ENG 214, 215, 216, 220, 221, 222, 231, 240, 241, 243, 245, 250.

Education, A.A. (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 ECE, elementary, secondary, special ed, 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 involve 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.
- Understand the diversity of students and student needs (educational, social, cultural, behavioral, academic) and the responsibility of a classroom teacher to meet these needs.
- Develop the ability to evaluate, analyze, and synthesize ideas from a variety of sources and formulate a preventative model of classroom management.
- Identify various elements, methods, and resources of effective teaching and learning and utilize them in planning instruction.
- Understand the role that assessment plays in instruction.

- Evaluate appropriate resources to plan instruction based on students' needs.
- Develop an understanding of teaching as a career choice, including job requirements, responsibilities, advantages, and disadvantages.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
PSY 140 - General Psychology	3

Electives

- Mathematics Elective 3 Credits
- Open Elective 3 Credits

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
HIS 110 - American History I	3

Electives

- Mathematics Elective 3 Credits
- Humanities Elective 3 Credits
- Open Elective 3 Credits

Third Semester (16 credits)

Courses	Credits
EDU 206 - Teaching with Technology	3
PSY 235 - Educational Psychology	3

Electives

- Lab Science 4 Credits
- Social Science Elective 3 Credits
- Education Elective 3 Credits

Fourth Semester (15 - 16 credits)**Electives**

- English / American Literature 3 Credits
- Natural Science Requirement 3-4 Credits
- Public Speaking 3 Credits
- Open Elective 3 Credits
- Education Elective 3 Credits

Notes

Education Electives are EDU 205, EDU 215 and EDU 220

Notes:

*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.

Total Credits: 61-62

Engineering Technology, Associate in Science

The Engineering Technology, A.S. (EGRT) program is designed for students planning to pursue a Bachelor's degree in Engineering Technology, typically B.S.E.T., at a four-year college or university.

The Engineering Technology, A.S. (EGRT) program may also serve students who have an interest in exploring careers in practical engineering involving mathematics, science and technology, but who do not necessarily plan to pursue careers as professional engineers. The course work emphasizes a solid foundation in college level mathematics and sciences, which will transfer to a wide variety of schools and programs, along with an opportunity to explore a variety of technical fields.

Exploring BSET programs and transferring technical courses is a complicated matter. Many courses in this program have pre-requisites and successful transfer will depend on careful planning of STEM electives. Students are strongly advised to meet with an Engineering or Engineering Technology faculty advisor or to consult with the Transfer Office prior to enrolling in this program or selecting courses.

An ability to apply the knowledge of mathematics, science, engineering and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.

Apply Engineering Technology related theory, experiments and real world experience to interpret, analyze and solve current and emerging technical problems.

Suggested Engineering Curriculum Option Electives, by transfer discipline:

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

Course	Chemical	Civil	Computer	Electrical	Mechanical
CHE 200 Organic Chemistry I	x				
CHE 201 Organic Chemistry II	x				
DPR 108 Intro. to Computer Science			x*		
DPR 212 Data Structures & Algorithms			x		
DPR 226 Object Oriented C++			x		
EGR 100 Engineering Graphics		x			x
EGR 200 Engineering Statics	x	x		x	x
EGR 201 Engineering Dynamics		x		x	x
EGR 210 Engineering Circuits				x	
EGR 220 Engineering Thermodynamics	x	x		x	x
MAT 200 Linear Algebra				x	x

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

An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments.

Communicate clearly and persuasively with technical and non-technical environment in oral, written and graphical forms.

First Semester (16 credits)

Courses	Credits
ENG 100 - Composition I	3
MAT 160 - Calculus I	5
PHY 110 - College Physics I	4
EGR 150 - Engineering Topics	1

Electives

- Social Science - 3 credits

Second Semester (16 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
MAT 161 - Calculus II	5
PHY 111 - College Physics II	4
CHE 110 - General Chemistry I	4

Third Semester (13-14 credits)

Courses	Credits
EGRT 201 - Circuit Analysis I	4

Electives

- Humanities Elective - 3 credits
- Social Science Elective - 3 credits
- STEM Elective - 3-4 credits

Fourth Semester (16-18 credits)

Courses	Credits
EGRT 202 - Circuit Analysis II	4

Electives

- Humanities Elective - 3 credits
- Social Science Elective - 3 credits
- STEM Elective - 3-4 credits
- Stem Elective - 3-4 credits

Notes:

Engineering Technology Curriculum Option Electives: Students are strongly advised to consult with both the DCCC Transfer Office and their academic advisor, regarding areas of Engineering Technology specialization.

Required Courses: ENG 100 and ENG 112, MAT 160 and MAT 161, PHY 110 and PHY 111, CHE 110, EGR 150, EGRT 201 and EGRT 202

Required Electives - General Education Courses: Humanities Electives (6) credits - See Advisor: Social Science Electives (9) credits - See Advisor

STEM Electives: Pick three courses from the following: EGRT 200, EGRT 203, EGRT 204, EGR 100, MAT 152, MAT 210 - See Advisor/Counselor

Total Credits: 61-64

Engineering, A.S. (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.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3

Electives

- Social Science Elective 3 Credits
- Mathematics/Science Electives 9 Credits

Second Semester (17 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
EGR 150 - Engineering Topics	1

Electives

- Mathematics/Science Electives 13 Credits

Third Semester (16-18 credits)

Electives

- Engineering Curriculum Options 6-8 Credits
- Mathematics/Science Electives 7 Credits
- Social Science Elective 3 Credits

Fourth Semester (15-17 credits)

Electives

- Engineering Curriculum Option 3-5 Credits
- Humanities Electives 6 Credits
- Mathematics/Science Elective 3 Credits
- Social Science Elective 3 Credits

Notes:

Suggested Engineering Curriculum Option Electives, by transfer discipline:

For Chemical Engineering select from CHE 200, CHE 201, EGR 200, EGR 220

For Civil Engineering select from EGR 100, EGR 200, EGR 201, EGR 220

For Computer Engineering select from DPR 108 (should be taken in the first year), DPR 212, DPR 226, EGR 210

For Electrical Engineering select from EGR 200, EGR 201, EGR 210, EGR 220, MAT 200

For Mechanical Engineering select from EGR 100, EGR 200, EGR 201, EGR 220, MAT 200

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.

Total Credits: 63-67

English, Associate in Arts (ENG)

The A.A. in English has been designed for students who plan to transfer to a four-year institution and earn a bachelor's degree in English. This degree is comprised of core Liberal Arts courses and English electives which are intended to provide students with the necessary foundation to be successful in more advanced courses. Students in this program are strongly encouraged to consult with their English advisor and a transfer counselor for appropriate guidance in the choice of their electives.

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

- Discuss different literary genres, literary periods, and styles of writing
- Apply different critical approaches to various pieces of literature
- Compose and present original literary analyses in both print and multimedia forms
- Write literary research papers which employ current information literary techniques and utilize standard MLA formatting

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- Recognize the importance of language through exploring its historical and cultural uses
- Identify and discuss major authors and their contributions to English studies

First Semester (16-17 credits)

Courses	Credits
ENG 100 - Composition I	3
MAT 120 - Modern College Mathematics or (below noted higher course).	
HIS 110 - American History I or	
HIS 130 - Western Civilization I	3
COMM 100 - Introduction to Interpersonal Communication or	
COMM 111 - Public Speaking	3

Electives

- Natural Science (with Lab) 4 credits

Notes

You may take MAT 120 or the following higher courses: MAT 121, MAT 125, MAT 126, MAT 135, MAT 136, MAT 151, MAT 152, MAT 160, MAT 161, MAT 200, MAT 210, MAT 230, MAT 260, MAT 261,

You may take HIS 110, HIS 130 or HIS 150

Second Semester (15-17 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
MAT 120 - Modern College Mathematics or (below noted higher course).	
HIS 120 - American History II or	
HIS 140 - Western Civilization II	3
ENG 115 - Research for English Majors	3

Electives

- Natural Science 3-4 credits

Notes

You may take MAT 120 or the following higher courses: MAT 121, MAT 125, MAT 126, MAT 135, MAT 136, MAT 151, MAT 152, MAT 160, MAT 161, MAT 200, MAT 210, MAT 230, MAT 260, MAT 261,

You may take HIS 110, HIS 130 or HIS 160

Third Semester (15 credits)

Courses	Credits
POL 120 - American National Government or	
POL 130 - American State and Local Government	3
ENG 220 - British Literature to 1800 or	
ENG 221 - British Literature to Modern	3
ENG 240 - World Literature I or	
ENG 241 - World Literature II	3

Electives

- Humanities Elective 3 credits
- English Elective 3 credits

Fourth Semester (15 credits)

Courses	Credits
ENG 230 - American Literature - Shaping the Ideal or	
ENG 231 - American Literature - Romanticism to Skepticism	3

Electives

Humanities Elective 3 credits

- Social Science Elective 3 credits
- Humanities/Social Science Elective 3 credits
- English Elective 3 credits

Notes

Minimum 61 credits (may be as many as 64 depending on math and science courses) MAT, HIS, Natural Science and all electives should be selected with the help of a transfer counselor.

Total Credits: 61-64

Global Studies, A.A. (GLOS)

The major in Global Studies will give students interdisciplinary perspectives on the interplay of local and global communities as well as prepare students to participate effectively in this global environment.

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

- Locate regions of the world accurately and understand their environmental, anthropological, sociological and cultural attributes
- Demonstrate knowledge of the history of human culture from its incipient origins in Africa to its global presence, with a particular perspective that investigates the interrelationship of various cultures on their own and others' emergence
- Recognize various cultural organizations - political, religious, economic and philosophical - and how they influence their native culture and other cultures
- Discuss the impact of artistic expression in the forms of literature, art, and music and the influence of such expression along a historical continuum within specific cultures and across cultures, including the contributions of marginalized groups
- Demonstrate at least an elementary ability to speak and understand a foreign language in both oral and written form
- Understand the concept of globalization in its environmental, anthropological, sociological, and cultural connotations and consider the benefits and detriments attached
- Demonstrate a self-awareness and an understanding of other's cultural values, beliefs, and communication styles and an appreciation for this diversity

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
MAT 120 - Modern College Mathematics	3
HIS 150 - World Civilization I	3
HUM 110 - Early Cultures to Renaissance Humanism and the Global Community of Today	3
COMM 100 - Introduction to Interpersonal Communication	3

Notes

May take MAT 120 or above (3 credits)

Second Semester (15-16 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
POL 200 - World Affairs	3
HIS 160 - World Civilization II	3
SOC 110 - Introduction to Sociology or	
PSY 140 - General Psychology	3
ESS 100 - Earth Science or	
SCI 100 - Man & Environment	4

Third Semester (15 credits)

Courses	Credits
ENG 240 - World Literature I	3
HUM 160 - Introduction to World Religions	3
HUM 120 - The Baroque to the Post-Modern and the Global Community of Today	3
SOC 215 - Experiences in Diversity or PSY 225 - Experiences in Diversity	3
Electives	
• Foreign Language I (3 credits)	

Notes

May take any first semester foreign language (3 credits)

Fourth Semester (15 credits)

Courses	Credits
ENG 241 - World Literature II	3
COMM 102 - Communication Across Cultures	3
Electives	
• Foreign Language II (3 credits)	
• Elective*	
• Elective*	

Notes

* Electives: Choose 3 elective credits from the Humanities group and 3 credits from the BUS/Social Science group (6 credits)

Humanities Electives: ART 110, ART 111, ART 112, DRA 100, DRA 105, ENG 225, MUS 115, HUM 100, HUM 162, HUM 167, HUM 168, HUM 173, Foreign Language and Study Abroad

BUS and/or Social Science Electives: ADJ 202, ADJ 280, BUS 101, BUS 111, ECO 210, HIS 224, HIS 225, HIS 235, HIS 251, HIS 256, HUS 101, POL 120, SOC 210, SOC 219, SOC 240, SOC 263 and Travel Study.

Total Credits: 60-61

Graphic Design, A.F.A. (GRA)

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.

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 graphic design.

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.

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

- Use 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.
- Demonstrate knowledge of the elements and principles of design and art historical references.
- Communicate issues of critical thinking skills via the creation of artworks and participation in the formal critique process.

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

The faculty advisor may approve the Co-op/Internship as additional credits beyond the 63 curriculum credit requirement.

First Semester (15 credits)

Courses	Credits
ART 130 - Drawing I	3
ART 122 - Two Dimensional Design	3
ENG 100 - Composition I	3
ART 110 - Art from the Ancient World through the Middle Ages or ART 111 - Art History II to Art from the Renaissance through Contemporary Times	3
ART 115 - History of Graphic Design	3
Electives	
• Social Science 3 Credits	

Notes

Choose 2 from ART 110, ART 111, ART 115

Second Semester (18 credits)

Courses	Credits
ART 131 - Drawing II or ART 136 - Drawing as a Design Process	3
ART 123 - Color and Design	3
ART 124 - Three Dimensional Design	3
ART 208 - Computer Illustration	3
ART 211 - Digital Imaging	3
ENG 112 - English Composition II: Writing About Literature	3

Notes

Choose either ART 131 or ART 136

Third Semester (15 credits)

Courses	Credits
ART 213 - Page Layout	3
ART 215 - Typography	3
ART 230 - Graphic Design I	3
MAT 120 - Modern College Mathematics	3
Electives	
• ART 199 Co-op/Internship or Open Elective 3 Credits	

Fourth Semester (15 credits)

Courses	Credits
ART 225 - Prepress and Printing Processes	3
ART 227 - Web Graphics	3
ART 228 - Motion Graphics	3
ART 231 - Graphic Design II	3
ART 232 - Portfolio Seminar	3

Total Credits: 63

History, A.A. (HIS)

The History Program is designed primarily but not limited to those students who wish to pursue a Baccalaureate Degree in History. The program of study will provide students with the foundational history courses as well as those courses that meet their general education requirements. Upon successful completion of an Associate in Arts Degree in History they will be able transfer into parallel programs.

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

- Students will be able to explain multiple aspects of the history of the United States from pre-colonial times to the present, such as cultural, social, political, economic, diplomatic, and military variables, and recognize the local and regional factors associated with these developments.
- Students will be able to explain multiple aspects of the history of the world from the dawn of civilization to the present, such as cultural, social, political, economic, diplomatic and military variables, and recognize the local, regional and national factors associated with these developments.
- Students will be able to explain the racial, ethnic, socio-economic, sexual, and religious diversity involved in the historical development of the United States and the world and recognize its relevance to events in their own place and time.
- Students will be able to recognize the difference between historical evidence and interpretation and utilize critical and analytical thinking to examine the causes and ramifications of historical events, topics and themes.
- Students will be able to develop their own perspective on history and provide evidence from both primary and secondary sources to support their viewpoints in written and oral form.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
HIS 110 - American History I	3
MAT 120 - Modern College Mathematics	3
POL 120 - American National Government	3
PSY 140 - General Psychology or	
SOC 110 - Introduction to Sociology	3

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
HIS 120 - American History II	3
COMM 111 - Public Speaking	3
DPR 100 - Introduction to Information Technology	3

Electives

- Social Science Elective - 3 credits

Third Semester (16 credits)

Courses	Credits
HIS 130 - Western Civilization I or	
HIS 150 - World Civilization I	3
ECO 220 - Microeconomic Principles	3

Electives

- Science Elective with Lab - 4 credits
- Humanities Elective - 3 credits
- Foreign Language - 3 credits

Fourth Semester (15 credits)

Courses	Credits
HIS 140 - Western Civilization II or	
HIS 160 - World Civilization II	3
HIS 200 - Civil War and Reconstruction	3

Electives

- Humanities Elective - 3 credits
- Social Science Elective - 3 credits
- Transfer Elective - 3 credits

Notes

May take HIS 200 or above

Total Credits: 61

Liberal Arts, A.A. (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:

- Evaluate, analyze and synthesize ideas 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.

First Semester (15-16 credits)

Courses	Credits
ENG 100 - Composition I	3
MAT 120 - Modern College Mathematics	3
COMM 100 - Introduction to Interpersonal Communication or	
COMM 111 - Public Speaking	3
HIS 110 - American History I or	
HIS 120 - American History II	3

Electives

- Humanities Elective (3 credits)

Notes

May take MAT 120 or above

May take HIS 110, 120, 130, 140, 150 or 160

Second Semester (15-16 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
HIS 130 - Western Civilization I or	
HIS 140 - Western Civilization II	3

Electives

- Humanities Elective (3 Credits)
- Social Science Elective (3 Credits)
- *Natural Science with Lab (4 Credits)

Notes

May take HIS 110, 120, 130, 140, 150 or 160

Math, Science and Elective courses should be selected from college transfer courses with aid of an advisor.

Third Semester (15-16 credits)

Courses	Credits
HIS 150 - World Civilization I or HIS 160 - World Civilization II	3

Electives

- Humanities Elective (3 Credits)
- MAT/Natural Science Elective (4 Credits)
- Humanities Elective (3 Credits)
- Social Science Elective (3 Credits)
- Open Elective

Notes

Math, Science and Electives courses should be selected from college transfer courses with the aid of an advisor.

Fourth Semester (15 credits)**Electives**

- Social Science Elective (3 Credits)
- Social Science Elective (3 Credits)
- Humanities Elective (3 Credits)
- Open Elective 6 Credits

Total Credits: 61-63

Mathematics/Natural Science A.S. (MNS)

The Mathematics/Science Program is designed to provide the foundation for students who plan to attend a four-year institution and major in mathematics, biology, chemistry, earth/space science, or physics. Students completing the Program will have taken the basic mathematics and science courses necessary to pursue academic, research, or industrial, careers in such diverse areas as biology, biotechnology, ecology, wildlife biology, organic chemistry, physical chemistry, biochemistry, astronomy, geology, physics, mathematics and applied mathematics. Students are strongly urged to meet with a Mathematics or Science faculty advisor and consult with the DCCC Transfer Office prior to course selection to determine the appropriate sequence and level of courses.

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

- Apply the concepts of mathematics to the solution of problems across the curriculum
- Demonstrate an understanding of scientific principles and concepts
- Apply scientific principles and concepts to 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

First Semester (16-19 credits)

Courses	Credits
ENG 100 - Composition I	3

Electives

- Laboratory Science Elective 4 Credits
- Mathematics Elective 3-5 Credits
- Social Science Elective 3 Credits
- Open Elective 3-4 Credits

Second Semester (16-19 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3

Electives

- Laboratory Science Elective 4 Credits
- Mathematics Elective 3-5 Credits
- Social Science Elective 3 Credits
- Open Elective 3-4 Credits

Third Semester (15-20 credits)**Electives**

- Mathematics/Laboratory Science Electives 6-9 Credits
- Humanities Elective 3 Credits
- Social Science/Humanities Elective 3 Credits
- Open Elective 3-5 Credits

Fourth Semester (15-21 credits)**Electives**

- Mathematics/Laboratory Science Electives 6-9 Credits
- Humanities Elective 3 Credits
- Open Electives 6-9 Credits

Notes:

Area Requirements - Associate of Science Core Courses
 Composition (6 credits): ENG 100 and ENG 112
 Mathematics Electives: (6 to 10 credits): MAT 151 or above
 Laboratory Science Electives: (8 credits): BIO 110 or above (Except BIO 150, 151, 220) CHE 110 or above, ESS 110 or above, PHY 110 or above
 Social Science Electives: (6 credits): (see current college catalogue for appropriate college transfer social science courses)
 Humanities (6 credits): (see current college catalogue for appropriate college transfer humanities courses)
 Social Science or Humanities: (3 credits): (see current catalogue for appropriate college transfer social science or humanities courses)
 Open Electives (15-22 credits): (May be used to take additional major courses. See current college catalogue for appropriate college transfer open courses)
 Mathematics/Laboratory Science Electives (12 to 18 credits): BIO 110 or above, CHE 110 or above, ESS 110 or above, MAT 151 or above, PHY 110 or above

Total Credits: 62-79

Photography, Associate in Fine Arts (PHO)

The Photography program develops professional image-makers through student-centered inquiry and practice in visual communication. Studies in Photography encompass the history, critical and aesthetic theory, and varied practices of photography as a medium of visual communication and expression in a diverse cultural society. Students explore a variety of photographic formats, including 35mm, medium format, and 4x5 view cameras and acquire experience in black-and-white, color, alternative, and digital imaging processes using state of the art methods, tools and facilities.

The Associate in Fine Arts Photography 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 photography.

Any remediation in Reading, English or Mathematics must be completed before beginning first semester courses. First-year requirements must be satisfied before beginning second-year course work.

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

- Demonstrate a proficiency with camera skills sufficient to produce consistent quality photographic imagery.
- Demonstrate advanced skills in materials and processes used in photography.
- Demonstrate a general knowledge of the history of photography from the 19th century to present day and its function in visual culture in the context of global art.
- Demonstrate knowledge of the elements and principles of two and three dimensional design, color theory, drawing and art historical references.
- Communicate in an effective and professional manner both verbally and in writing about the creation and contextual analysis of visual images.
- Communicate issues of critical thinking skills via the creation of artworks and participation in the formal critique process.
- Produce a portfolio demonstrating a coherent personal vision and visual literacy.

- The degree Associate in Fine Arts is awarded upon successful completion of the photography course sequence with a grade of C (2.0 GPA) or better in all ART courses. ART courses with a grade lower than C must be repeated.

First Semester (15 credits)

Courses	Credits
ART 130 - Drawing I	3
ART 122 - Two Dimensional Design	3
ART 133 - Photography I for A.F.A. majors	3
ENG 100 - Composition I	3
MAT 120 - Modern College Mathematics	3

Second Semester (18 credits)

Courses	Credits
ART 123 - Color and Design	3
ART 124 - Three Dimensional Design	3
ART 134 - Photography II for A.F.A. Majors	3
ENG 112 - English Composition II: Writing About Literature	3
ART 116 - History of Photography	3

Electives

- Social Science Elective - 3 credits

Third Semester (15 credits)

Courses	Credits
ART 211 - Digital Imaging	3
ART 236 - Digital Photography I	3
ART 237 - Alternative Processes	3
ART 238 - Medium Format Photography	3

Electives

- History/Humanities Elective - 3 credits

Fourth Semester (16 credits)

Courses	Credits
ART 239 - Digital Photography II	3
ART 240 - Large Format Photography	3
ART 241 - Portfolio Presentation	3

Electives

- Laboratory Science (see list below) 4 credits
- History/Humanities (see list below) 3 credits

Notes**Humanities Electives:**

(Choose two):

- ART 100 - Art History I
- ART 111 - Art History II
- ART 112 - History of Non-Western Art
- ART 203 - History of Modern Art
- HUM 141 - Film Language

Laboratory Science Electives:

(Choose one):

- BIO 110 - Introduction Biology I
- BIO 115 - Field Ecology
- CHE 110 - General Chemistry
- ESS 100 - Earth Science
- ESS 110 - Geology
- ESS 111 - Observational Astronomy
- Social Science Elective

Total Credits: 64**Psychology, A.S. (PSY)**

The Psychology program is designed for students planning to earn at least a bachelor's degree in psychology or a closely related field. The curriculum focuses on developing a solid foundation of knowledge regarding human thought, behavior, and emotion, both individual and collective. The various courses are intended to foster the development of cultural, personal, and professional awareness. Additionally, students are encouraged to develop critical thinking, technological, and communication skills.

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

- Describe the discipline of psychology, differentiating the various sub-fields.
- Understand the major methodologies for studying human behavior.
- Differentiate the nature of the affective, cognitive, and biological domains as they apply to human behavior.
- Describe major theories concerning human development across the lifespan.
- Explain the causes, classification, and treatment of psychological disorders.
- Recognize major influences that impinge socially and psychologically on the individual in today's complex and diverse society.

First Semester (15-17 credits)

Courses	Credits
ENG 100 - Composition I	3
HIS 150 - World Civilization I	3
PSY 140 - General Psychology	3
COMM 111 - Public Speaking	3
MAT 121 - Introduction to Probability and Statistics	3

Second Semester (15-17 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
HIS 160 - World Civilization II	3
SOC 110 - Introduction to Sociology	3
MAT 210 - Statistics	3

Electives

- Humanities Elective - 3 credits

Third Semester (16 credits)

Courses	Credits
PSY 225 - Experiences in Diversity	3
SOC 260 - Research Methods In the Social Sciences	3

Electives

- Open Elective - 3 credits
- Psychology Elective - 3 credits
- Laboratory Science Elective - 4 credits

Notes

BIO 110 is recommended as a laboratory science elective

Fourth Semester (16 credits)**Electives**

Laboratory Science Elective - 4 credits
 Humanities Elective - 3 credits
 Open Elective - 3 credits
 Psychology Elective - 6 credits

Notes

Psychology Elective - 9 credits

At least 6 credits in two of the following categories:

Human Development (no more than 3 credits)

- PSY 210 - Lifespan Human Development - 3 credits
- PSY 241 - Child Psychology - 3 credits
- PSY 242 - Adolescent Psychology - 3 credits
- PSY 290 - Adulthood and Aging - 3 credits

Individual Process

- PSY 200 - Personality Theories - 3 credits
- PSY 202 - Theories of Counseling - 3 credits
- PSY 203 - Counseling Skills - 3 credits
- PSY 204 - Foundations of Addiction - 3 credits
- PSY 205 - Human Sexual Behavior - 3 credits
- PSY 220 - Abnormal Psychology - 3 credits

Applied Psychology

- PSY 215 - Industrial Psychology - 3 credits
- PSY 221 - Social Psychology - 3 credits

Learning and Cognition

- PSY 235 - Educational Psychology - 3 credits

Total Credits: 62-66

Science for Health Professions, A.S. (HSCI)

The Science for Health Professions Program is designed for students who plan to transfer and continue their education in an allied health or pre-medical field at another institution. It provides the basic sciences needed for a variety of programs, including Physical Therapy, Occupational Therapy, Baccalaureate Nursing, Physician Assistant, Pharmacy, Medicine, Dentistry, Veterinary Medicine, Optometry, and Podiatry. 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 the mathematical skills necessary to solve real-world, computational problems in their chosen health science career field.
- Demonstrate the ability to express themselves in a competent and reasonable manner, both orally and through written material.
- Have the ability to read and apply information relevant to their education, career and life-long learning goals.
- Access printed and electronic resources to obtain information.
- Develop an informed reaction to works in the humanities as an expression of the views of others and the ability to develop one's own values.
- Identify differences and commonalities within diverse cultures and understand their relevance to the healthcare industry.
- Use the scientific method to gather data, interpret data and draw conclusions.
- Demonstrate laboratory skills in basic sciences.
- 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.

First Semester (16-18 credits)**Courses**

ENG 100 - Composition I3

Electives

- Social Science Elective 3 Credits
- Laboratory Science Electives 4 Credits
- Mathematics Electives 3-5 Credits
- Humanities Elective 3 Credits

Credits**Second Semester (16-18 credits)****Courses**

ENG 112 - English Composition II: Writing About Literature3

Electives

- Humanities Elective 3 Credits
- Social Science Elective 3 Credits
- Laboratory Science Electives 4 Credits
- Mathematics Electives 3-5 Credits

Third Semester (14-15 credits)**Electives**

- Social Science Elective 3 Credits
- Mathematics/Science Elective 8-9 Credits
- Open Electives 3 Credits

Fourth Semester (14-15 credits)**Electives**

- Mathematics /Science Electives 8-9 Credits
- Open Elective 6 Credits

Notes:

For Mathematics Electives (6-10): MAT 100, 121, 151, 152, 160, 161, 200, 210, 260, 261

For Lab Science Electives (8): BIO 110, 111, 150, 151, 230; CHE 101, 102, 110, 111, 200, 201; PHY 110, 111, 131, 132

For Mathematics/Science Electives(6-18): MAT 100, 121, 151, 152, 160, 161, 200, 210, 260, 261; BIO 110, 111, 150, 151, 220, 230; CHE 101, 102, 110, 111, 200, 201; PHY 110, 111, 131, 132

For Open Electives (9) : DPR 100 is recommended

Recommendation for students transferring into BSN Nursing programs:

Requirements vary between transfer institutions. Please schedule an appointment with a Transfer Advisor BEFORE registering for classes.

Total Credits: 60-66

Social Work, A.A. (SWO)

The Social Work Associate in Arts curriculum was developed to meet the needs of current and prospective students interested in transferring to a college or university and eventually earning a Bachelor in Social Work degree. The curriculum was developed to provide students with the introductory-level knowledge in the field of social work study and to support a seamless transfer to the junior level status at a four-year college or university offering a Council of Social Work Education-Accredited Bachelor in Social Work degree (BSW).

Social Workers serve some of the most vulnerable populations, therefore this degree addresses the significant history, policies, theories and applied practices utilized when working with marginalized individuals, families, groups and communities. Social Workers use a person and environment construct that views human challenges through a diverse, multi-systemic lens. An overarching goal of the program is to provide courses that prepare students to demonstrate the basic knowledge, values and skills that are required of a beginning social work practitioner.

Various transfer institutions require differing elective courses; therefore students are highly encouraged to work closely with a transfer counselor, from the DCCC Career and Counseling Center, to ensure a seamless process to a four-year institution.

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

- Demonstrate self-awareness of who one is and why one is choosing to pursue the profession of social work.

- Understand and apply the knowledge, values and skills of the Social Work Profession at the introductory level.
- Identify the historical development of the knowledge and values of the Social Work profession at the introductory level.
- Analyze the impact of key societal systems that have supported the systemic devaluation of and discrimination toward certain groups in our society.
- Describe the relationship between the knowledge and values of a culturally competent social work at the introductory level.
- Demonstrate the introductory level skills necessary to work from a strengths perspective with diverse individuals, families, groups, organization and communities.
- Identify concepts, assumptions and critiques of developmental theories as they relate to life across the lifespan.
- Explain the bio-psycho-social perspective of lifespan development in a multicultural context and the significance of the intersections of people and their environments.

First Semester (15 credits)

Courses	Credits
SWO 101 - Introduction to Social Work and Human Services or HUS 101 - Introduction to Social Work and Human Services	3
ENG 100 - Composition I	3
PSY 140 - General Psychology	3
MAT 121 - Introduction to Probability and Statistics	3
HIS 110 - American History I	3

Notes

- MAT 121 or higher
- HIS 110 or higher (HIS 110 recommended)

Second Semester (16 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
COMM 111 - Public Speaking	3
SOC 110 - Introduction to Sociology	3
BIO 100 - Biological Science or BIO 110 - Introductory Biology I	4
PSY 225 - Experiences in Diversity or SOC 215 - Experiences in Diversity	3

Third Semester (15 credits)

Courses	Credits
SWO 210 - Human Behavior and the Social Environment I	3
SWO 220 - Social Welfare Policy	3
PHI 110 - Contemporary Moral Problems	3

Electives

- POL Elective - 3 credits
- Electives choose from the grouping below - 3 credits

Notes

- POL 120 or higher (POL 120 recommended)

Electives:

Choose (2) courses (6 credits) from the following courses: ECO 210, HUS 201, PSY 202, PSY 204, PSY 205, PSY 220, PSY 290, PSY 241, PSY 242, SOC 219, SPA

Students interested working with bilingual population are encouraged to take: SPA

Students interested in the field of Gerontology:: PSY 290
Students interested in the field of Addictions: PSY 204
Students interested in the field of Mental Health: PSY 220

Fourth Semester (16 credits)

Courses	Credits
MAT 210 - Statistics	3
PSY 203 - Counseling Skills	3

Electives

- Science Elective/Laboratory Science 4 credits
- Humanities Elective (Literature or Foreign Language) 3 credits
- Electives - choose from the grouping below - 3 credits

Notes

Electives:

Choose (2) courses (6 credits) from the following courses: ECO 210, HUS 201, PSY 202, PSY 204, PSY 205, PSY 220, PSY 290, PSY 241, PSY 242, SOC 219, SPA

Students interested working with bilingual population are encouraged to take: SPA

Students interested in the field of Gerontology:: PSY 290

Students interested in the field of Addictions: PSY 204

Students interested in the field of Mental Health: PSY 220

Total Credits: 62

Sociology, A.S. (SOC)

The Sociology curriculum is designed for students planning to earn at least a bachelor's degree in sociology. Concentration in the curriculum develops analytical assessment skills and knowledge construction of group dynamics, between dyads and collectives; and social interactions, including their genesis and evolution. The associate's degree in sociology curriculum is an excellent choice for students who desire a more comprehensive understanding of social group behavior, an enriched educational experience in addition to those who desire to practice in the field of sociology or another similar social science professional career field. The curriculum focus is paradigm in the learning of the knowledge, skills, practices and values required for transfer to a bachelor's degree bearing program. Courses in the curriculum assess student understanding of environmental factors that shape human perceptions and behaviors.

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

Discuss the important characteristics of the science of sociology.

- Cite the major methodologies for studying human behavior.
- Describe the major theoretical approaches to examine group behavior in society.
- Cite significant sociological aspects of human development over the life cycle
- Detail the socialization process.
- List the causes and remedies of social disruption.
- Delineate major influences that socially impinge upon groups in today's complex and diverse society.

First Semester (16 credits)

Courses	Credits
SOC 110 - Introduction to Sociology	3
ENG 100 - Composition I	3
HIS 150 - World Civilization I	3

Electives

- Lab Science (4 credits)
- Humanities Elective (3 credits)

Second Semester (16 credits)

Courses	Credits
SOC 215 - Experiences in Diversity	3
ENG 112 - English Composition II: Writing About Literature	3
SOC 210 - Cultural Anthropology	3
MAT 121 - Introduction to Probability and Statistics	3

Electives

- Lab Science (4 credits)

Notes

SOC 219 may be substituted for SOC 215

Third Semester (15 credits)

Courses	Credits
PSY 140 - General Psychology	3
HIS 160 - World Civilization II	3
SOC 120 - Social Problems	3
MAT 210 - Statistics	3

Electives

- Open Elective (3 credits)

Fourth Semester (15 credits)

Courses	Credits
SOC 180 - Sociology of Marriage and The Family	3
COMM 111 - Public Speaking	3
SOC 220 - Social Psychology	3

Electives

- Humanities Elective (3 credits)
- Open Elective (3 credits)

Total Credits: 62

Studio Arts, A.F.A. (ART)

The AFA in Studio Arts degree will prepare students to transfer into a 4-year Bachelor of Fine Arts program. Students will be provided with all foundation-level studio courses with a primary concentration in drawing and painting.

The Associate in Fine Arts degree will prepare students to transfer into a 4-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 curriculum, 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 through the creation of artworks and participation in the formal critique process.
- Produce a portfolio of artworks that demonstrates all of the above principles.

First Semester (15 credits)

Courses	Credits
ART 130 - Drawing I	3
ART 122 - Two Dimensional Design	3
ENG 100 - Composition I	3
ART 110 - Art from the Ancient World through the Middle Ages	3
ART 124 - Three Dimensional Design	3

Second Semester (15 credits)

Courses	Credits
ART 131 - Drawing II	3
ART 123 - Color and Design	3
ENG 112 - English Composition II: Writing About Literature	3
ART 111 - Art History II to Art from the Renaissance through Contemporary Times	3

Electives

- Social Science Elective 3 Credits

Third Semester (16 credits)

Courses	Credits
ART 140 - Painting I	3
ART 145 - Watercolor Painting	3
MAT 120 - Modern College Mathematics	3
ART 211 - Digital Imaging or	
ART 160 - Black and White Photography I	3

Electives

- Lab Science Elective 4 Credits

Fourth Semester (15 credits)

Courses	Credits
ART 141 - Painting II	3
ART 112 - Art From Africa Asia and Beyond or	
HUM 100 - Introduction to Visual Arts	3
ART 143 - Life Drawing and Painting	3
ART 203 - History of Modern Art	3

Electives

- Open Elective 3 Credits

Notes

Choose either ART 203 or ART 112 or HUM 100

Total Credits: 61

CAREER PROGRAMS

Leading to an Associate Degree

Accounting, A.A.S. (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 curriculum, 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.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
MATH 105 - Business Math	3
BUS 100 - Introduction to Business	3
ACC 111 - Financial Accounting	3
DPR 100 - Introduction to Information Technology	3

Second Semester (16 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
ACC 112 - Managerial Accounting	3
ACC 115 - Computerized Accounting	4
BUS 243 - Legal Environment of Business	3

Electives

- Social Science Elective 3 Credits

Third Semester (16 credits)

Courses	Credits
ACC 201 - Introduction to Cost Accounting	3
ACC 202 - Introduction to Tax Accounting	3
BUS 130 - Business Communication	3

Electives

- Social Science Elective 3 Credits
- Science Elective 4 Credits

Fourth Semester (15-16 credits)

Electives

- Accounting / Business 3 Credits
- Business / DPR 3-4 Credits
- Humanities 3 Credits
- BUS 199 or Business 3 Credits
- Open Elective 3 Credits

Notes

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 Microsoft 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.

Total Credits: 62-63

Advanced Technology, A.A.S. (ADVT)

The Advanced Technology Program is designed to serve individuals who desire hands-on training and education for the acquisition or advancement of a technical career in areas such as manufacturing, electronics, industrial production, process control, computer aided design and drafting, facilities management, and CNC operations. The program is flexible enough that it can serve those both at entry level and those with established skills who seek technical growth or advancement through continued education.

The program provides for up to 30 credits to be awarded toward the Associate of Applied Science Degree for technical courses or certificates completed at the college and may include equivalent work or training experiences assessed as Credit for Prior Learning. The curriculum includes general education and information technology cores that will develop skills in communication, computer applications and applied science while strengthening problem solving and critical thinking skills essential to career advancement.

This program is designed primarily to serve students who have completed Advanced Technology Certificate programs at the college. Ideally, students would pursue this program as continuing education after beginning employment as a trainee following certificate completion.

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

- Advance the technical skills and knowledge required for continued growth and success in an advanced technology industry.
- Effectively communicate to stakeholders regarding projects in their chosen discipline.
- Apply problem solving skills to industry processes to guarantee safety and continued productivity.
- Properly select and implement appropriate project management methods to industry related situations.

First Semester (15-18 credits)

Courses	Credits
ENG 100 - Composition I	3
TCC 111 - Technical Communication	3

Electives

- MAT Elective (3-5 credits)
- Science Elective (3-4 credits)
- Advanced Technology Elective (3 credits)

Second Semester (15-18 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3

Electives

- MAT Elective II (3-5 credits)
- Science Elective II (3-4 credits)
- HUM/Social Science Elective (3 credits)
- Advanced Technology Elective (3 credits)

Third Semester (15 credits)

Courses	Credits
TCC 121 - Project Management Processes	3
TCS 141 - Construction First Aid/Safety	3

Electives

- Advanced Technology Electives (2) - 6 credits
- Open Elective (3 credits)

Fourth Semester (15 credits)**Electives**

- Advanced Technology Electives (4) - 12 credits
- Open Elective (3 credits)

Notes**Mathematics Electives:**

Select two courses MAT 110 or higher (with the exception of MAT 125 or MAT 126)

Recommend MAT 110 and MAT 111

Advanced Technology Electives:

Select any 24 credits of courses from ARC, TCC, TCS, TDD, TEL, TME, IST, PCT, MTT.

(Recommended: Establish an "Area of Concentration" by following prescribed Advanced Technology Certificate Program)

Science Electives:

CHE 105 - Technical Chemistry or higher and PHY 100 -Technical Physics I or higher

Total Credits: 60-66

Culinary Arts, Associate in Applied Science (CUL)

The Culinary Arts, A.A.S program prepares students for employment in various segments of the foodservice industry in positions such as restaurant chef, banquet chef, sous chef, kitchen manager, production cook, line cook and prep cook. The program includes academic courses, skills development in kitchen lab courses, and an optional externship experience.

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

- Demonstrate knowledge and use of foodservice and culinary terminology
- Exhibit the ability to identify various food products and their common uses
- Demonstrate various cooking methods and appropriate presentation techniques
- Properly use and care for professional foodservice equipment and culinary tools
- Produce foods that meet employers' standards and satisfy consumer demands
- Exhibit ability to produce various ethnic and regional cuisines
- Apply principles of good nutrition in producing foods that meet consumer demands
- Demonstrate knowledge of safe and food handling practices; receive food handlers' sanitation certification
- Seek successful employment in a wide variety of commercial and non-commercial foodservice operations

First Semester (15 credits)

Courses	Credits
HRM 110 - Food Sanitation and Safety Supervision	3
CUL 115 - Professional Cooking I	3
CUL 150 - Baking & Pastry Foundations I	3
MATH 105 - Business Math or	
MAT 135 - Business Precalculus	3
ENG 100 - Composition I	3

Notes

Please note: May take MAT 135 or above.

Second Semester (15 credits)

Courses	Credits
CUL 210 - Foodservice Purchasing	3
CUL 215 - Menu Planning & Cost Control	3
CUL 230 - Professional Cooking II	3
DPR 100 - Introduction to Information Technology	3

Electives

- Humanities Elective (Recommend ART, FRE, GER, SPA or ITA) 3 credits

Third Semester (15-16 credits)

Courses	Credits
HRM 100 - Introduction to Hospitality	3
CUL 231 - Garde Manger	3
CUL 151 - Baking and Pastry Foundations II	3
ENG 112 - English Composition II: Writing About Literature	3

Electives

- Science Elective (3/4 credits)

Fourth Semester (15 credits)

Courses	Credits
HRM 165 - Managing Hospitality Human Resources	3
CUL 220 - Nutrition and the Hospitality Industry	3
CUL 232 - International Cuisine	3
PSY 140 - General Psychology or	
SOC 110 - Introduction to Sociology	3

Electives

- Humanities Elective: Select from HRM 199, HRM 145, HRM 162, HRM 253, HRM 254 or HRM 255 (3 credits)

Total Credits: 60-61

Emergency Management and Planning, Associate in Applied Science (EMER)

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 professionals such as Emergency Managers, Firefighters, Law Enforcement Officers or Medical or Allied Health 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:

- 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 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.

First Semester (15-16 credits)

Courses	Credits
ENG 100 - Composition I	3
EMER 105 - Incident Management	3

Electives

- Science Elective 3-4 credits
- Program Electives (Choose from FST, EMS, EMTP, ADJ, AHM, AHN, NUS, MPT) 6 credits

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
EMER 110 - Emergency Planning	3

Electives

- Humanities Elective 3 credit
- Program Electives (Choose from FST, EMS, EMTP, ADJ, AHM, AHN, NUS, MPT) 6 credits

Third Semester (15 credits)

Courses	Credits
EMER 130 - Search and Rescue	3
MAT 100 - Intermediate Algebra	3

Electives

- Social Science Elective 3 credits
- Business Elective (Choose from DPR, BUS, or ACC) 3 credits
- Program Electives (Choose from FST, EMS, EMTP, ADJ, AHM, AHN, NUS, MPT) 3 credits

Fourth Semester (16 credits)

Courses	Credits
EMER 120 - Leadership and Influence	3
EMER 140 - Emergency Management Seminar	1
ADJ 202 - Terrorism: History, Threat and Response	3

Electives

- Program Electives (Choose from FST, EMS, EMTP, AHM, ADJ, AHN, NUS, MPT) 9 credits

Notes

Some of the "program electives" listed above may require special admission.

Total Credits: 61-62

General Business, A.A.S. (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 financial transactions, perform calculations, and prepare financial statements.
- Use terminology common to the business world.
- Discuss the factors that influence business in the domestic environment.
- Prepare written correspondence commonly used in business.
- Research, prepare and present oral reports common to business.
- 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.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
MATH 105 - Business Math	3
DPR 100 - Introduction to Information Technology	3
BUS 100 - Introduction to Business	3

Electives

- Social Science Elective 3 Credits

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
ACC 100 - Applied Accounting or	
ACC 111 - Financial Accounting	3

Electives

- Social Science/Humanities Elective 3 Credits
- ACC/BUS/DPR Elective 6 Credits

Third Semester (15 credits)

Courses	Credits
BUS 130 - Business Communication	3

Electives

- Science Elective 3 Credits
- ACC/BUS/DPR Elective 9 Credits

Fourth Semester (15 credits)

Courses	Credits
BUS 225 - Professional Development	3

Electives

- Humanities Elective 3 Credits
- ACC/BUS/DPR Elective 9 Credits

Notes:

Recommended ACC/BUS/DPR Electives:

ACC 112 Managerial Accounting 3 Credits
 ACC 115 Computerized Accounting 3 Credits
 ACC 201 Introduction to Cost Accounting 3 Credits
 ACC 202 Introduction to Tax Accounting 3 Credits
 BUS 101 Introduction to International Business 3 Credits
 BUS 102 Introduction to Electronic Commerce 3 Credits
 BUS 110 Sales and Sales Supervision 3 Credits
 BUS 149 Small Business Management 3 Credits
 BUS 210 Principles of Management 3 Credits
 BUS 215 Human Resource Management 3 Credits
 BUS 230 Principles of Marketing 3 Credits
 BUS 231 Principles of Advertising 3 Credits
 BUS 232 Principles of Finance 3 Credits
 BUS 233 Financial Planning 3 Credits
 BUS 243 Legal Environment of Business 3 Credits
 DPR 105 Management Information Systems 3 Credits
 DPR 108 Introduction to Computer Science 3 Credits
 DPR 111 Advanced Office Software

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 for MATH 105.

Total Credits: 60

General Studies, A.A.S. (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.

First Semester (15-16 credits)

Courses	Credits
ENG 100 - Composition I	3

Electives

- Mathematics or Science Elective 3-4 Credits
- Social Science Elective 3 Credits
- Open Elective 6 Credits

Second Semester (15-16 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3

Electives

- Mathematics or Science Elective 3-4 Credits
- History or Political Science Elective 3 Credits

Third and Fourth Semesters:

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 A 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.

Total Credits: 60

Health Care Management, A.A.S. (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.

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.

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.
- 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.
- Demonstrate an understanding of the issues and practices applicable to health information.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
MATH 105 - Business Math	3
SOC 110 - Introduction to Sociology	3
DPR 100 - Introduction to Information Technology	3
AHM 102 - Introduction to Health Care	3

Notes

MAT 120 or above may be selected instead of MATH 105.

Second Semester (15 credits)

Courses	Credits
AHM 233 - Medical Terminology	3
AHM 140 - Professional and Communication Issues in Health Care	3
COMM 100 - Introduction to Interpersonal Communication or	
BUS 130 - Business Communication	3
BUS 100 - Introduction to Business	3
ENG 112 - English Composition II: Writing About Literature	3

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Third Semester (15 credits)

Courses	Credits
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

Electives

- Allied Health/Business Elective 3 Credits

Fourth Semester (15 credits)

Courses	Credits
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

Notes:

A Certificate of Competency in Managed Care is also available. Enrollment is limited to health care professionals.

Advanced-Standing: 15 credits

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, 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 102 Introduction to Health Care and Health Information
AHA 207 Ethical/Legal Aspects of Health Care Management
AHM 140 Professional and Communication Issues in Health Care
_____ Allied Health/Business Elective

Total Credits: 60

Health Studies - Pre-Nursing Option, A.A.S. (HSTN)

All students interested in Nursing at DCCC should follow this course schedule

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. Examples of positions that would be applicable include: Billing Supervisor, Patient Service Representative, Medical Administrative Assistant, Medical Supply Manager, and Allied Health Instructor. 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 degreed course of study. The program offers a broad view of health care related topics while providing a basic liberal studies foundation.

Upon completion of this program the student will be able to:

- Know 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 critical reasoning skills 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 and factors related to current trends and 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.
- Demonstrate an understanding of the issues and practices applicable to health information.

First Semester (16 credits)

Courses	Credits
ENG 100 - Composition I	3
BIO 150 - Human Anatomy and Physiology I	4
PSY 140 - General Psychology	3
SOC 110 - Introduction to Sociology	3

Electives

Social Science or Humanities Elective 3 Credits

Second Semester (13 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
BIO 151 - Human Anatomy and Physiology II	4
PSY 220 - Abnormal Psychology	3
PSY 210 - Lifespan Human Development	3

Notes:

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

NUS110 Fundamentals of Nursing 8

Spring Semester

NUS 111 Nursing Concepts and Practice 10

Fall Semester

NUS 210 Nursing Concepts and Practice II 10

Spring Semester

NUS 211 Nursing Concepts and Practice III 10

NUS Elective 3

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

DPR 100 Introduction to Information Technology 3
AHM 102 Introduction to Health Care and Health Information. 3
AHM 233 Medical Terminology 3
BIO 100 Biological Science 4
* _____ Social Science or Humanities Elective 3
Elective

Fourth Semester

AHM 140 Professional and Communication Issues in Health Care	3
AHA 207 Ethical/Legal Aspects of Health Care Management	3
MAT 120 Modern College Mathematics I	3
AHA 209 Philosophy of Managed Care	3
BIO 220 Nutrition and Well Being	3
_____ Allied Health Elective	3

*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.

Health Studies, A.A.S. (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. Examples of positions that would be applicable include: Billing Supervisor, Patient Service Representative, Medical Administrative Assistant, Medical Supply Manager, and Allied Health Instructor. 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 degreed course of study. The program offers a broad view of health care related topics while providing a basic liberal studies foundation.

Upon completion of this program the student will be able to:

- Know 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 critical reasoning skills 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 and factors related to current trends and 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.
- Demonstrate an understanding of the issues and practices applicable to health information.

First Semester (9 credits)

Courses	Credits
ENG 100 - Composition I	3
DPR 100 - Introduction to Information Technology	3
AHM 102 - Introduction to Health Care	3
AHM 233 - Medical Terminology	3

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
SOC 110 - Introduction to Sociology	3
AHM 140 - Professional and Communication Issues in Health Care	3

Electives

- Humanities Elective 3 Credits
- Open Elective 3 Credits

Third Semester (15-16 credits)

Courses	Credits
AHM 104 - Body Structure/Function I or	
BIO 150 - Human Anatomy and Physiology I	3
AHA 207 - Ethical/Legal Aspects of Health Care Management	3
MAT 120 - Modern College Mathematics	3

Electives

- Allied Health Elective 3 Credits
- Social Science Elective 3 Credits

Fourth Semester (15-16 credits)

Courses	Credits
AHM 105 - Body Structure/Function II or	
BIO 151 - Human Anatomy and Physiology II	3
PSY 140 - General Psychology	3
AHA 209 - Philosophy of Managed Care	3
BIO 220 - Nutrition and Well Being	3

Electives

- Open Elective 3 Credits

Notes:

Humanities Electives include: Any courses listed as ART, DRA, ENG 113 or above, FRE, HUM, ITA, MUS, PHI, SPA, COMM

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)

A student must take either AHM and AHM 105 OR BIO 150 and BIO 151. Note a student may take AHM 105 prior to taking AHM 104.

For students holding external certificates who wish to transfer credits to this program Natural Science electives will satisfy these credit requirements.

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.

Total Credits: 60 or 62

Hotel and Restaurant Management, A.A.S. (HRM)

The Hotel/Restaurant Management program is designed for individuals seeking specialized training and knowledge as preparation for a career in the vast hospitality industry. The successful graduate can enter the industry at a supervisory level and perform management functions and duties to this industry.

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

- Awareness of the variety of career options in lodging/restaurant management.
- Use terminology specific to the lodging/restaurant/food service industry.
- Understand the common supervisory skills required to operate a lodging property.
- Apply federal, state, and local laws and regulations that are specific to the lodging and restaurant industry.
- Be certified in food handling sanitation.
- Knowledge of a wide variety of foods typically served in a lodging or food service establishment.
- Plan and cost a meal for a group.
- Use generally accepted accounting practices to record transactions common to this industry.
- Use financial information to control internal costs and improve operational effectiveness.
- Communicate effectively with employers, employees, customers, vendors and the community in writing and speech.
- Use computer application software to prepare reports and presentations.
- Apply human resource management principles in dealing with employees.
- Use sales techniques common to the service marketing of lodging and food.

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First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
MATH 105 - Business Math or	
MAT 135 - Business Precalculus	3
DPR 100 - Introduction to Information Technology	3
HRM 100 - Introduction to Hospitality	3
HRM 110 - Food Sanitation and Safety Supervision	3

Notes

MATH 105, MAT 135 or above

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
ACC 100 - Applied Accounting or	
ACC 111 - Financial Accounting	3
SOC 110 - Introduction to Sociology or	
PSY 140 - General Psychology	3
HRM 155 - Managing Lodging Operations	3
HRM 162 - Laws of Innkeepers	3

Third Semester (15 credits)

Courses	Credits
HRM 145 - Sales and Marketing in Hospitality or	
BUS 230 - Principles of Marketing	3
HRM 253 - Restaurant Management	3

Electives

- HRM or CUL electives 6 credits
- Science Elective 3 credits

Fourth Semester (15 credits)

Courses	Credits
HRM 165 - Managing Hospitality Human Resources or	
BUS 215 - Human Resource Management	3
HRM 254 - Catering & Event Planning	3

Electives

- HRM 199 (CSEL) or CUL or HRM electives 6 Credits
- Humanities Elective 3 Credits

Total Credits: 60

Information Technology, Computer Programming, A.A.S. (DPRP)

The Associate in Applied Sciences in the Information Technology fields at Delaware County Community College blends the theoretical with the practical. Students are offered a choice of specializations: 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 students interested in 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 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 requirements for the specific associate's degree.

The Computer Programming 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 the student 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

Required Courses

	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
DPR 100 - Introduction to Information Technology	3
IMM 120 - Web Page Development	3
NET 110 - Network Communications	3
DPR 105 - Management Information Systems	3
DPR 108 - Introduction to Computer Science	3
DPR 205 - Introduction to Java Programming	4
DPR 207 - Intro to Oracle:SQL	4
DPR 212 - Data Structures & Algorithms	4
DPR 222 - Visual Basic Programming	4
DPR 226 - Object Oriented C++	4

Required Electives:

- Social Science Elective 3 Credits
- Humanities Elective 3 Credits
- Science Elective 3 - 4 Credits
- Mathematics Elective 6 - 10 Credits

Program Electives

	Credits
DPR 113 - Database Management Systems	4
DPR 141 - UNIX Operating Systems	3
DPR 206 - Programming for the Web	3

Notes:

For Mathematics Electives choose one sequence from the following:

MAT 135-136 or MAT 140-141 or MAT 150-160-161

Choose 2 courses from DPR 113, DPR 141, DPR 206 or DPR 199/ IMM / DPR / NET Electives

Total Credits: 65-71

Information Technology, Game Development, A.A.S. (ITGD)

The Associate in Applied Sciences in the Information Technology fields at Delaware County Community College blends the theoretical with the practical. Students are offered a choice of specializations: 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 students interested in 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 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 requirements for the specific associate's degree.

The Game Development option prepares 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 option.

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

- Develop a game concept and create a game design document
- Develop a prototype from their game design using a game development tool
- Program a game in an object oriented programming language
- Test the usability of a computer game
- Develop a game portfolio and a game marketing plan

Required Courses	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
DPR 100 - Introduction to Information Technology	3
IMM 120 - Web Page Development	3
NET 110 - Network Communications	3
DPR 105 - Management Information Systems	3
DPR 108 - Introduction to Computer Science	3
DPR 232 - Introduction to Computer Game Design and Development	3
DPR 226 - Object Oriented C++ or	
DPR 205 - Introduction to Java Programming	4
DPR 234 - Introduction to Computer Game Programming	4
DPR 236 - Game Art & Animation or	
IMM 110 - Multimedia Graphics & Design	3
IMM 201 - Audio & Video for Multimedia	3
DPR 238 - Game Design Theory & Practice	3
DPR 250 - Game Portfolio	3

Required Electives:

- Mathematics Electives 6 - 10 Credits
- Social Science Elective 3 Credits
- Humanities Elective 3 Credits
- Science Elective 3 - 4 Credits

Notes:

For Mathematics Elective choose one of the following sequences: MAT 120-121, or MAT 135-136, or MAT 150-160-161

Total Credits: 62-67

Information Technology, Help Desk/Technical Support, A.A.S. (DMP)

The Associate in Applied Sciences in the Information Technology fields at Delaware County Community College blends the theoretical with the practical. Students are offered a choice of specializations: 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 students interested in 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 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 requirements for specific the associate's degree.

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 qualify 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 the student 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.

Required Courses	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
DPR 100 - Introduction to Information Technology	3
IMM 120 - Web Page Development	3
NET 110 - Network Communications	3
DPR 105 - Management Information Systems	3
DPR 107 - Helpdesk Concepts	3
DPR 111 - Computer Applications	3
DPR 113 - Database Management Systems	4
DPR 227 - Introduction to PC Support	3
DPR 228 - PC Repair & Maintenance	3
NET 116 - Managing Microsoft Windows Server 2008	4
NET 230 - Network Operating Systems Concepts	4

Required Electives:

- Mathematics Electives 6-10 Credits
- Social Science Elective 3 Credits
- Humanities Elective 3 Credits
- Science Elective 3-4 Credits
- IMM/ NET/ DPR Electives 6 - 8 Credits

Notes:

For Mathematics electives choose one of the following sequences: MAT 120-121 or MAT 135-136 or MAT 150 and MAT 160-161

Total Credits: 64-71

Information Technology, Interactive Multimedia, A.A.S. (IMM)

The Associate in Applied Sciences in the Information Technology fields at Delaware County Community College blends the theoretical with the practical. Students are offered a choice of specializations: 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 students interested in 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 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 requirements for specific the associate's degree.

The Interactive Multimedia option provides the student with the 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 the student 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, storyboarding, 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.

Required Courses	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
DPR 100 - Introduction to Information Technology	3
IMM 120 - Web Page Development	3
NET 110 - Network Communications	3
DPR 105 - Management Information Systems	3
IMM 100 - Interface Design and Rapid-Prototyping	3
IMM 110 - Multimedia Graphics & Design	3
IMM 201 - Audio & Video for Multimedia	3
IMM 202 - Multimedia Authoring	3
IMM 205 - Flash	3
IMM 250 - Portfolio Development	3
DPR 108 - Introduction to Computer Science	3
DPR 205 - Introduction to Java Programming	4
DPR 226 - Object Oriented C++	4
DPR 206 - Programming for the Web	3

Required Electives:

- Mathematics Electives 6-10 Credits
- Social Science Elective 3 Credits
- Humanities Elective 3 Credits
- Science Elective 3-4 Credits

Notes:

Choose either DPR 205 or 226

For Mathematics electives choose one of the following sequences: MAT 120-121 or MAT 135-136, MAT 150 and MAT 160-161

Total Credits: 61-66

Information Technology, Mobile Computing, A.A.S. (MOB)

Mobile Computing involves the development and deployment of specialized software and technologies that enable mobile and hand-held computing devices to function. These devices include mobile phones, smart phones, tablet devices, ebook readers and other portable personal technology devices. This program is designed to prepare students with the knowledge and skills needed to enter the mobile computing field. Students prepare for careers in a variety of entry-level positions such as mobile app developer, software developer, programmer, and mobile game developer. The degree builds a solid foundation of programming and design skills and introduces the specific skills needed for developing mobile/wireless applications for iOS, Android, and general web display with HTML. Students gain an understanding of mobile/wireless technologies and how these technologies are utilized and integrated to meet specific business needs. Current technologies and architectures that provide the network and communications infrastructure for mobile enabled systems are also covered. Students will learn to design mobile user interfaces and apply standards to create intuitive, usable and efficient applications.

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

- Understand current technologies and architectures that provide the network and communications infrastructure for mobile enabled computer systems
- Define and identify the importance, types and uses of various mobile devices
- List the various operating systems used in mobile devices and discuss their advantages and disadvantages
- Apply appropriate user interface design techniques and standards to create intuitive, usable and efficient designs
- Identify the appropriate development tools, IDE's and emulators for creating and publishing various mobile applications and web sites
- Design and create web sites for display on a variety of different mobile devices and screens
- Design and create applications for smart-devices using iOS and Android OS frameworks and relevant programming languages
- Describe the standards and processes for submitting apps for distribution through the Apple App Store and Android Apps on Google Play
- Identify careers related to mobile computing and examine requisite skills

First Semester (15-17 credits)

Courses	Credits
ENG 100 - Composition I	3
DPR 100 - Introduction to Information Technology	3
DPR 108 - Introduction to Computer Science	3

Electives

- Math Elective 3-5 credits
- Social Science Elective 3 credits

Second Semester (15-17 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
DPR 213 - iPhone and iPad App Development using Objective-C	3
IMM 120 - Web Page Development	3
IMM 110 - Multimedia Graphics & Design or	
DPR 236 - Game Art & Animation	3

Electives

- Math Elective 3-5 credits

Notes

For Mathematics electives choose one of the following sequences, MAT 120 and MAT 121, or MAT 135 and MAT 136, or MAT 140 and MAT 141, or MAT 151 and MAT 152.

Third Semester (16 credits)

Courses	Credits
DPR 205 - Introduction to Java Programming	4
IMM 205 - Flash	3
DPR 241 - Mobile Web Development	3
NET 110 - Network Communications	3

Electives

- Humanities Elective 3 credits

Fourth Semester (15-16 credits)

Courses	Credits
DPR 105 - Management Information Systems	3
IMM 100 - Interface Design and Rapid-Prototyping	3
DPR 214 - jQuery/JavaScript	3
DPR 224 - Android App Development	3

Electives

- Science Elective 3-4 credits

Total Credits: 61-66

Information Technology, Network Engineering, A.A.S. (DPRN)

The Associate in Applied Sciences in the Information Technology fields at Delaware County Community College blends the theoretical with the practical. Students are offered a choice of specializations: 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 students interested in 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 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 requirements for specific the associate's degree.

The Network Engineering option prepares students for employment as networking specialists in the communications industry. The material presented in the Network Engineering curriculum provides students with the knowledge and skills necessary to successfully complete many of the exams required for Computing Technology Industry Association (CompTIA) and Microsoft (MS) certifications.

In conjunction with the general education and Information Technology (IT) core requirements, the student should be able to:

- Install and configure a Linux network operating system.
- Install and configure a MS Windows Network operating system
- Administer, manage, and troubleshoot a Linux operating system.
- Administer, manage, and troubleshoot a MS Windows 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 protocol suite (TCP/IP) .
- Given a set of factors and constraints, design an appropriate network topology and its transmission media.

Required Courses

Required Courses	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
DPR 100 - Introduction to Information Technology	3
IMM 120 - Web Page Development	3
DPR 227 - Introduction to PC Support	3
DPR 228 - PC Repair & Maintenance	3
NET 110 - Network Communications	3
NET 115 - Microsoft Windows 7	4
NET 116 - Managing Microsoft Windows Server 2008	4
NET 117 - Microsoft Window Server 2008 Active Directory	4
NET 210 - CISCO Network Support	6
NET 230 - Network Operating Systems Concepts	4
NET 231 - Network Systems Administration	4
NET 232 - Network Design & Implementation	4
NET 242 - Network Security Concepts	4

Required Electives:

- Mathematics Electives 6 - 10 Credits
- Social Science Elective 3 Credits
- Humanities Elective 3 Credits
- Science Elective 3-4 Credits

Notes:

For Mathematics Electives choose one of the following sequences: MAT 120-121 or MAT 135-136 or MAT 151-152 OR MAT 160-161

Total Credits: 70-75

Information Technology, Web Development, A.A.S. (ITWD)

The Associate in Applied Sciences in the Information Technology fields at Delaware County Community College blends the theoretical with the practical. Students are offered a choice of specializations: Programming, Computer Applications, Network Engineering, Web Development, Interactive Multimedia, Mobile Computing, 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 students interested in 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 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 requirements for the specific associate's degree.

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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, network administration, database management, interface design and programming. Students learn to create web sites using current industry standard software and technologies. In addition, students learn how to incorporate media technologies such as sound, video, and animation into web.

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

- Plan for a professional web site including graphics design, structural analysis, and data gathering.
- Design and create intuitive, usable interfaces for desktop and mobile devices
- Create web sites using current HTML and CSS standards.
- Create responsive web applications that display appropriately on a variety of mobile, tablet, laptop and desktop screens.
- Upload files to a web server and update and maintain web sites.
- Incorporate scripting languages into web documents to add control and interactive elements.
- Understand and support current Linux systems.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
DPR 100 - Introduction to Information Technology	3
DPR 108 - Introduction to Computer Science	3
NET 110 - Network Communications	3

Electives

- Social Science Elective - 3 credits

Second Semester (15-17 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
IMM 205 - Flash	3
DPR 241 - Mobile Web Development	3
IMM 120 - Web Page Development	3

Electives

- Math Elective - 3-5 credits

Third Semester (16-18 credits)

Courses	Credits
DPR 207 - Intro to Oracle:SQL	4
DPR 241 - Mobile Web Development	3
DPR 206 - Programming for the Web	3

Electives

- Humanities Elective - 3 credits
- Math Elective - 3-5 credits

Fourth Semester (16-17 credits)

Courses	Credits
DPR 105 - Management Information Systems	3
NET 230 - Network Operating Systems Concepts	4
IMM 110 - Multimedia Graphics & Design	3
DPR 214 - jQuery/Java Script	3

Electives

- Science Elective - 3-4 credits

Required Courses

	Credits
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
DPR 100 - Introduction to Information Technology	3
DPR 108 - Introduction to Computer Science	3
IMM 120 - Web Page Development	3
DPR 105 - Management Information Systems	3
NET 110 - Network Communications	3
IMM 100 - Interface Design and Rapid-Prototyping	3
DPR 214 - jQuery/Java Script	3
DPR 207 - Intro to Oracle:SQL	4
IMM 205 - Flash	3
DPR 141 - UNIX Operating Systems	3
DPR 241 - Mobile Web Development	3
DPR 206 - Programming for the Web	3

Required Electives:

- Mathematics Electives 6-10 Credits
- Social Science Elective 3 Credits
- Humanities Elective 3 Credits
- Science Elective 3-4 Credits

Notes:

For Mathematics electives choose one of the following sequences: MAT 120 and 121, or MAT 135 and 136, or MAT 140 and 141, or MAT 150 and 151.

Total Credits: 62-67

Machine Tool Technology, A.A.S. (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, the student should be able to:

- Analyze, interpret, qualify 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 (17 credits)

Courses	Credits
MAT 110 - Technical Mathematics I	4
MTT 110 - Print Layout and Measurement for Machining	4
MTT 111 - Introduction to Manufacturing	3
TCC 111 - Technical Communication	3
MTT 112 - Lathe Operations I	3

Second Semester (16 credits)

Courses	Credits
MTT 122 - Lathe Operations II	3
MTT 124 - Milling Operations I	3
MAT 111 - Technical Mathematics II	4
ENG 100 - Composition I	3
MTT 129 - Solids (CAM) Modeling	3

Third Semester (18 credits)

Courses	Credits
MTT 214 - Milling Operations II	3
MTT 210 - CNC Machine Tool Operations	3
MTT 219 - CAM Solids I	3
ENG 112 - English Composition II: Writing About Literature	3
COMM 100 - Introduction to Interpersonal Communication	3

Electives

- Social Science Elective 3

Fourth Semester (16-17 credits)

Courses	Credits
MTT 220 - CNC Programming	3
MTT 229 - CAM Solids II	3
MTT 230 - Electrical Discharge Machining	4
PHY 100 - Technical Physics I	3

Electives

- Machining Elective(s) 3-4

Notes:

MAT 160, MAT 161 may be elected instead of MAT 110, MAT 111.
Social Science Electives (SOC 100 to 200), American History II (HIS 120); or, Microeconomics Principles (ECO 220)

Suggested machining electives: Manufacturing Processes (MTT213), 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), CSEL (College Sponsored Experiential Learning), any 3 or 4 credit combination.

Total Credits: 67 - 68

Medical Assistant, A.A.S. (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 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 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 students are required to sit for the national certification examination offered by the American Association of Medical Assistants (AAMA) at a designated time during enrollment in the Medical Assistant Practicum (AHM 199). 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 the results of a complete physical examination including: laboratory tests, a complete blood count, seasonal influenza vaccine, a 10-panel urine drug screen and a two-step Mantoux PPD prior to beginning the clinical component of the program. Please refer to the pre-entrance medical record health form requirements from the Program Director. Additionally, students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine. Full CPR certification is required and you must submit a photocopy (both sides) of the CPR Certification Card. For example, acceptable CPR courses are the "Health Care Provider" (American Heart Association) or "Course for the Professional" (American Red Cross) which are renewable every two years. Documentation of completion of the above must be on file in the Allied Health, Emergency Services and Nursing Department prior to entering the Medical Assistant Practicum (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.

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.

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.
- Demonstrate an understanding of the issues and practices applicable to health information.

First Semester (15 credits)

Courses	Credits
AHM 104 - Body Structure/Function I	3
AHM 233 - Medical Terminology	3
ENG 100 - Composition I	3
DPR 100 - Introduction to Information Technology	3
PSY 140 - General Psychology	3

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Second Semester (12 credits)

Courses	Credits
AHM 105 - Body Structure/Function II	3
AHM 140 - Professional and Communication Issues in Health Care	3
ENG 112 - English Composition II: Writing About Literature	3
AHM 102 - Introduction to Health Care	3

Third Semester (14 credits)

Courses	Credits
AHA 207 - Ethical/Legal Aspects of Health Care Management	3
AHM 106 - Medical Assistant Techniques and Practicum I	4
AHM 185 - Medical Office Management	4
SOC 110 - Introduction to Sociology	3

Fourth Semester (15 credits)

Courses	Credits
AHM 107 - Medical Assistant Techniques and Practicum II	4
AHM 208 - Pathophysiology and Pharmacology	4
AHM 130 - Medical Coding Concepts for Allied Health	3
AHM 220 - Applied Microbiology	1

Electives

- Humanities Elective 3 Credits

Notes

Summer I or II
AHM 199 Medical Assistant Practicum 6 Credits
A certificate of proficiency is also available.
*Commission on Accreditation of Allied Health Programs, 1361 Park Street,
Clearwater, FL 33756, (717) 210-2350

Total Credits: 62

Medical Coding and Billing, A.A.S. (MCBA)

The Medical Coding and Billing A.A.S. Degree 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 is used on claims for reimbursement, patient care management, and healthcare evaluation and research. The curriculum includes medical terminology, human anatomy, pathophysiology, pharmacology, administrative medical office management, electronic health records, and CPT and ICD coding. The graduate of this degree may take the Certified Coding Associate (CCA) certification exam offered by AHIMA (American Health Information Management Association). After completing CCA exam and / or working in the field, students qualify to take the Certified Coding Specialist (CCS) or Certified Coding Specialist - Physician Based (CCS-P) exam offered by AHIMA.

- 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 as they apply to reimbursement in health care.
 - Apply and identify appropriate coding systems as they pertain to the identification of diseases and procedures in medical practices and hospital settings.
 - Evaluate coding to ensure maximum reimbursement.
 - Demonstrate ability to interact successfully with private and government medical reimbursement systems.
 - Discuss the cultural and societal factors that influence the healthcare professional's communications with the patient.
 - Identify the routes of administration, indications, adverse effects, and related laboratory studies for commonly used medications.

- Explain the disease process and concepts of pain assessment and management.
- Compare and contrast coding specialties to determine similarities and differences of the different body systems.
- Create a portfolio to demonstrate professional skills to enhance marketability for employment.

First Semester (15-17 credits)

Courses	Credits
AHM 233 - Medical Terminology	3
AHM 104 - Body Structure/Function I	3
AHM 105 - Body Structure/Function II	3
AHM 102 - Introduction to Health Care	3
ENG 100 - Composition I	3

Notes

Students who previously taken BIO 150 and BIO 151 (Human Anatomy and Physiology I and II) and completed the courses with a "C" or better, are not required to take AHM 104 and AHM 105.

Second Semester (16 credits)

Courses	Credits
DPR 100 - Introduction to Information Technology	3
AHM 230 - Introduction to ICD-9-CM Coding Principles	3
AHM 231 - Introduction to CPT-4 Coding	3
AHM 208 - Pathophysiology and Pharmacology	4
or	
PHI 110 - Contemporary Moral Problems	3

Third Semester (15 credits)

Courses	Credits
AHA 207 - Ethical/Legal Aspects of Health Care Management	3
AHM 202 - Fundamentals of Health Information Technology Science	3
AHM 232 - Advanced CPT-4 Coding	3
AHM 240 - Hospital Coding and Case Studies	3
AHM 241 - Medical Billing	3

Fourth Semester (15 credits)

Courses	Credits
AHM 242 - Virtual Professional Practice Experience Capstone	3
PSY 140 - General Psychology	3
SOC 110 - Introduction to Sociology	3
AHM 140 - Professional and Communication Issues in Health Care	3
ENG 112 - English Composition II: Writing About Literature	3

Total Credits: 61-63

Nursing - Day Program, A.A.S. (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 some 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 Accreditation Commission for Education in Nursing, 3343 Peachtree Road, NE, Suite 500, Atlanta, GA 30326, 404-975-5000, www.acenursing.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 curriculum, 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 applicants 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, Math for Nurses. 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 Math for Nurses (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!

Students who fail or withdraw from a nursing course and wish to repeat said course must:

Have a GPA of 2.5 or greater.

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

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. "BCLS" 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 (\$60 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 practicums 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.

First Semester (18 credits)

Courses	Credits
BIO 150 - Human Anatomy and Physiology I	4
ENG 100 - Composition I	3
PSY 140 - General Psychology	3
NUS 110 - Fundamentals of Nursing	8

Second Semester (20 credits)

Courses	Credits
BIO 151 - Human Anatomy and Physiology II	4
ENG 112 - English Composition II: Writing About Literature	3
PSY 210 - Lifespan Human Development	3
NUS 111 - Nursing Concepts and Practice I	10

Third Semester (16 credits)

Courses	Credits
PSY 220 - Abnormal Psychology	3
SOC 110 - Introduction to Sociology	3
NUS 210 - Nursing Concepts and Practice II	10

Fourth Semester (16 credits)

Courses	Credits
NUS 211 - Nursing Concepts and Practice III	10

Electives

- Humanities or Social Science Elective 3 Credits
- Nursing Elective 3 Credits

Program Electives

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

Total Credits: 70

Nursing - Evening/Weekend Program, A.A.S. (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 some 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 Accreditation Commission for Education in Nursing, 3343 Peachtree Road, NE, Suite 500, Atlanta, GA 30326, 404-975-5000, acenursing.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 curriculum, 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 applicants 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, Math for Nurses. 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 Math for Nurses (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!

Students who fail or withdraw from a nursing course and wish to repeat said course must:

Have a GPA of 2.5 or greater.

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

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. "BCLS" 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 (\$60 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 practicums 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.

First Semester (12 credits)

Courses	Credits
ENG 100 - Composition I	3
SOC 110 - Introduction to Sociology	3
PSY 140 - General Psychology	3

Electives

• Humanities or Social Science Elective 3 Credits

Second Semester (12 credits)

Courses	Credits
NUS 110 - Fundamentals of Nursing	8
BIO 150 - Human Anatomy and Physiology I	4

Third Semester (17 credits)

Courses	Credits
NUS 111 - Nursing Concepts and Practice I	10
BIO 151 - Human Anatomy and Physiology II	4
PSY 210 - Lifespan Human Development	3

Fourth Semester (16 credits)

Courses	Credits
NUS 210 - Nursing Concepts and Practice II	10
ENG 112 - English Composition II: Writing About Literature	3
PSY 220 - Abnormal Psychology	3

Required Courses

NUS 211 - Nursing Concepts and Practice III	10
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Required Electives:

• Nursing Elective 3

Program Electives

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

Total Credits: 70

Paralegal Studies, A.A.S. (PLG)

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.

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 completion of this program, students are awarded the associate in applied science degree.

Upon successful completion of the associate degree program in Paralegal Studies, 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

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
PLG 130 - Technology in the Law	3
PLG 100 - Introduction to Paralegal	3
PLG 110 - Legal Research & Writing I	3

Electives

• Social Science Elective 3 Credits

Second Semester (15 credits)

Courses	Credits
COMM 100 - Introduction to Interpersonal Communication	3
PLG 120 - Legal Research & Writing II	3
PLG 140 - Contract Law	3

Electives

- * Mathematics Elective 3 Credits
- Social Science/Humanities Elective 3 Credits

Third Semester (15 credits)

Courses	Credits
ACC 100 - Applied Accounting	3
ENG 112 - English Composition II: Writing About Literature	3
PLG 200 - Family Law	3
PLG 210 - Civil Litigation and Tort Principles	3

Electives

- Science Elective 3 Credits

Fourth Semester (15 credits)

Courses	Credits
PLG 211 - Civil Litigation and Tort Applications	3
PLG 220 - Real Estate Law	3
PLG 230 - Estates, Trusts and Wills	3

Electives

- PLG Paralegal Elective 3 Credits
- PLG 199 Co-op Internship / Paralegal Electives 3 Credits

Notes:

* Business Mathematics (MATH 105) or any mathematics course numbered MAT 120 or higher may be used as an elective.

Total Credits: 60

Paramedic - Advanced Life Support, A.A.S. (EMTP)

The Associate in Applied Science Degree: Paramedic - Advanced Life Support program is designed for individuals who are seeking careers as paramedics. Paramedic careers include 9-1-1 emergency response, inter-facility and critical care transport via ground and aero-medical vehicles. The primary focus of the program is to provide the education, skills and clinical experiences to best prepare the entry level paramedic. The National Emergency Medical Services Education Standards: Paramedic Instructional Guidelines were used in developing the competencies and course content for the Paramedic-Advanced Life Support degree program.

The Delaware County Community College is an accredited Emergency Medical Services Training Institute with the Pennsylvania Department of Health, Bureau of Emergency Medical Services, the Committee on Accreditation of Educational Programs for Emergency Medical Services Professions (CoAEMSP) and the Commission on Accreditation of Allied Health Education Programs (CAAHEP).

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 (EMTP and EMS) courses, Anatomy and Physiology I (BIO 150), Anatomy and Physiology II (BIO 151) and Nursing Mathematics: Dosage Calculation and Drug Preparation (NUS 102). Students in this degree program must maintain a C or better in all EMTP courses and BIO 150 and BIO 151 to remain in the program and must progress through the curriculum in sequence. Students who do not maintain a C or better in BIO 150 and BIO 151 and all EMTP courses in accordance with the program retest policy, will be dismissed from the program and must reapply to the program in a subsequent year.

Students will be allowed a total of one (1) retest for each written exam, or a total of three (3) retests of written examinations throughout the entire paramedic program. Students will be allowed one (1) retest for each practical exam. Students will be allowed one (1) retest for the Program Summative Exam. Failure to pass a retest examination (written or practical) will result in dismissal from the Paramedic Program. There will be no opportunity to retest a quiz, group assignment, clinical assignment or research paper.

Upon successful completion of the 40 credits of EMTP and EMS core classes and 8 credits of BIO 150, BIO 151 and NUS 102, with a C or better, students are eligible to sit for the National Registry exam to become certified as a Paramedic. This national certification exam consists of twelve psychomotor (skill) stations as well as a computer-based cognitive exam. Completion of the A.A.S. degree does not guarantee the student a National Registry Certification 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.

Students are expected to attend all scheduled classes. If a student is absent from more than 24-hours in the ENTIRE program they will be dismissed from the program. Students wishing to reenter the program must re-apply.

Students who are accepted into the Paramedic - Advanced Life Support program are required to immediately divulge a ny misdemeanor or felony convictions that may occur while in the program to the Director of Emergency Services Education. Failure to do so will result in dismissal from the program in accordance with the Department of Health, Bureau of Emergency Medical Services policies. In addition, upon review by the Bureau of Emergency Medical Services, the student may be dismissed from the program and denied paramedic certification.

NOTE: Students who are currently certified Paramedics wishing to obtain the Paramedic-Advanced Life Support A.A.S. degree may be awarded 36 credits for prior learning by DCCC upon evaluation of current documentation as required by the Assessment Center. Students who are awarded the credit for prior learning will be required to take two three credit Emergency Management and Planning (EMER) courses in lieu of EMS 100.

Students are required to submit the following documentation to the Director of Emergency Services Education by the fourth week of the first spring semester of the program:

Submit a clear FBI Criminal Background check (which includes fingerprinting) and a Criminal Background check from the state of residency. If student has a prior criminal history, he/she will be required to petition to the PA Bureau of EMS and be approved for admissions prior to acceptance into the Paramedic program. Students with a prior criminal history are encouraged to contact their Regional EMS office to determine their eligibility for state certification as a paramedic. Students with a criminal history may be denied admission to the program.

Submit a clear Child Abuse Background Check

Successfully complete a physical examination, including drug testing.

Submit verification of current medical health insurance, which must be maintained throughout the program.

Be 18 years of age or older

Be currently certified as a Pennsylvania Emergency Medical Technician or have a reciprocity application in process for PA EMT certification. This certification must be maintained throughout the program.

Be currently certified as a CPR provider by one of the third-party accreditation bodies approved by the PA Department of Health, Bureau of Emergency Medical Services. This certification must be maintained throughout the 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.

First Semester (14-17 credits) - Fall

Courses	Credits
EMS 100 - Emergency Medical Technician	9
ENG 100 - Composition I	3
BIO 150 - Human Anatomy and Physiology I	4
NUS 102 - Nursing Mathematics: Dosage Calculation and Drug Preparation	1

Notes

Currently certified Paramedics must take two three-credit EMER electives (6 credits) in lieu of taking EMS 100.

Second Semester (13 credits) - Fall

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
BIO 151 - Human Anatomy and Physiology II	4
PSY 140 - General Psychology	3

Electives

- Humanities / Social Science Elective 3 Credits

Third Semester (6 credits) - Summer I

Courses	Credits
EMTP 100 - Introduction and Patient Assessment	6

Fourth Semester (6 credits) - Summer I

Courses	Credits
EMTP 101 - Pharmacology and Airway Management	6

Fifth Semester (14 credits) - Fall

Courses	Credits
EMTP 102 - Trauma Assessment and Management	5
EMTP 103 - Cardiology	4
EMTP 104 - Medical Assessment and Management	3
EMTP 105 - Clinical Rotations I	2

Sixth Semester (14 credits) - Spring

Courses	Credits
EMTP 200 - Summative Field Clinical	8
EMTP 201 - Operations and Special Patient Populations	4
EMTP 205 - Clinical Rotations II	2

Total Credits: 67-70

Respiratory Therapy, A.A.S. (RESP)

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

The mission of the Delaware County Community College/Crozer-Chester Medical Center Advanced-Practitioner level Respiratory Therapy Program is to provide a curriculum where students can develop the competencies and skills essential to deliver safe, effective respiratory care in a variety of health care settings.

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 Allied Health, Emergency Services and Nursing Department the results of a complete physical examination including: laboratory tests, a complete blood count, and a two-step

Mantoux PPD. 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.

Students must progress through the curriculum in sequence. Students must maintain a GPA of 2.0 to remain in the program. Credits for BIO 150 and 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 150 or BIO 151, ENG 100 and CHE 110.

Admission to the program is dependent on:

Satisfactory scores on the Health Occupations Basic Entrance Test (HOBET-V)

Reading Comprehension - 54%

Mathematics - 46%

Science - 33%

English Language & Usage - 46%

Prerequisite requirements with a GPA of 2.5

English Composition 1 (ENG 100) with a grade of "C" or better

General Chemistry (CHE 110) with a grade of "C" or better

Math proficiency as demonstrated by one of the following: Completion of any algebra based math course: MAT 100 or above, (not including MAT 120 or MAT 121, MAT 125, MAT 126, MAT 210) with a grade of "C" or better. DCCC placement test score for Math Placement into MAT 135 or above. Successful completion of the College Algebra CLEP exam (College Level Examination Program). Transfer of credit from another regionally accredited institution of a "C" or better in a math course equivalent to MAT 100 or above, (not including MAT 120 or MAT 121, MAT 125, MAT 126, MAT 210).

Students who fail or withdraw from a respiratory therapy course and wish to repeat said course must have a GPA of 2.5. Due to the sequential nature of the program, the student must petition for readmission to the program or a Respiratory Therapy course through the Respiratory Therapy department at Crozer-Chester Medical Center (not the College Admission Office). Readmission to the program is on a space available basis and only possible if the student can graduate within two years of his/her initial class graduation. 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. If a student will be re-entering the program in the summer, or in the second year of the program, the student will be required to register for and audit the prior clinical course to refresh their clinical skills. Upon readmission to the program, the student must complete the program within two years following the graduation date of his/her initial class.

The Respiratory Therapy program is accredited by the Commission on Accreditation for Respiratory Care (CoARC), 1248 Harwood Rd., Bedford, Texas, 76021-4244, (817) 283-2835, www.CoARC.com. To view the accreditation data for the program outcomes, please follow this link directly to the Programmatic Outcomes Data page: <http://www.coarc.com/47.html>

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 under The Controlled Substance, Drug, Device and Cosmetic Act (35 P.S. 780-101 - 780-144) or of an offense under the statutes of another jurisdiction which, if committed in Pennsylvania, would be a felony under The Controlled Substance, Drug, Device and Cosmetic Act, unless the at least 10 years have elapsed from the date of conviction and the applicant satisfactorily demonstrates 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, Emergency Services and Nursing offices) may not be able to complete their studies because clinical experiences needed for the program success may be prohibited. If a student cannot complete their clinical studies, they will not be accepted into the Respiratory Therapy Program.

In addition to normal tuition and fees, respiratory therapy students are required to purchase uniforms, personal health insurance and other miscellaneous supplies necessary for the clinical experience.

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, is then eligible to take the Advanced Practitioner’s Examination.

Upon successful completion of the Advanced Practitioner’s Examination, the Registered Respiratory Therapist credential is awarded.

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.

First Semester (15 credits)

Courses	Credits
RTH 110 - Respiratory Therapy Principles and Practicum I	8
BIO 150 - Human Anatomy and Physiology I	4
ENG 112 - English Composition II: Writing About Literature	3

Second Semester (15 credits)

Courses	Credits
RTH 102 - Respiratory Therapy Principles II	2
RTH 103 - Respiratory Therapy Practicum II	6
BIO 151 - Human Anatomy and Physiology II	4
PSY 140 - General Psychology	3

Third Semester (5 credits)

Courses	Credits
RTH 104 - Respiratory Therapy Summer Clinical I	5

Fourth Semester (5 credits)

Courses	Credits
RTH 105 - Respiratory Therapy Summer Clinical II	5

Fifth Semester (12 credits)

Courses	Credits
RTH 200 - Respiratory Therapy Principles III	3
RTH 201 - Respiratory Therapy Clinical Practicum III	6
RTH 204 - Pulmonary Pathophysiology Clinical Rounds I	2
AHM 220 - Applied Microbiology	1

Sixth Semester (14 credits)

Courses	Credits
RTH 202 - Respiratory Therapy Principles IV	3
RTH 203 - Respiratory Therapy Practicum IV	6
RTH 205 - Pulmonary Pathophysiology Clinical Rounds II	2

Electives

- Humanities Elective 3 credits

Seventh Semester (4 credits)

Courses	Credits
RTH 206 - Respiratory Therapy Summer Clinical III	4

Total Credits: 77-82

Skilled Trades, A.A.S. (SKTR)

The Skilled Trades Program is designed to serve individuals who already have an established background in a skilled trade such as automotive, electrical, plumbing, heating, ventilation and air conditioning, carpentry and welding and who desire to advance their career, through continued education, into a supervisory or management role. The program provides for up to 30 credits to be awarded toward the Associate in Applied Science Degree for a trade or technical certificate completed at the college, and may include equivalent work or training experiences assessed as Credit Prior Learning. The curriculum includes general education and information technology cores that will develop skills in communication, computer applications and applied science while strengthening problem solving and critical thinking skills essential to career advancement.

Program Options

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

- Build on acquired skills and competencies to develop a career ladder that will provide professional advancement in an applicable industry.
- Apply communication and problem solving skills in situations of increasing responsibility.
- Apply relevant scientific principles and mathematical operations to workplace situations in skilled trade occupations.
- Identify general concepts and specific applications in one or more management functions relevant to a skilled trade such as automotive, electrical, plumbing, heating, ventilation, and air conditioning, carpentry and welding.

First Semester (15-17 credits)

Courses	Credits
ENG 100 - Composition I	3
CHE 105 - Technical Chemistry	3
TCC 111 - Technical Communication	3

Electives

- MAT Elective (3-5 credits)
- Skilled Trades Elective (3 credits)

Second Semester (15-17 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3

Electives

- MAT Elective (3-5 credits)
- Social Science Elective (3 credits)
- Humanities Elective (3 credits)
- Skilled Trades Elective (3 credits)

Third Semester (15 credits)

Courses	Credits
DPR 100 - Introduction to Information Technology	3
TCS 141 - Construction First Aid/Safety	3

Electives

- Skilled Trades Electives (3) 9 credits

Fourth Semester (15 credits)

Electives

- Skilled Trades Elective (5) 15 credits

Skilled Trades Electives:

- Select any 30 credits of courses from AUT, CPT, ELT, HVA, PLB, TCC or WLD.
- (Recommended: Established an “Area of Concentration” by following pre-scribed Skilled Trades Certificate programs)

Surgical Technology, A.A.S. (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 Commission on Accreditation of Allied Health Education Program (CAAHEP). 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. Students who fail or withdraw from a surgical technology course and want 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, Æ (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.

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.

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 nonsterile 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 nonsterile and sterile responsibilities of the surgical technologist in the intraoperative care of the surgical patient.
- Identify the postoperative patient care concepts and nonsterile 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.

First Semester (16-17 credits)

Courses	Credits
AHS 100 - Surgical Technology I	5
AHS 101 - Surgical Technology Practicum I	5
BIO 150 - Human Anatomy and Physiology I or	
AHM 104 - Body Structure/Function I	4
AHM 233 - Medical Terminology	3

Notes

- Prerequisites to AHS 100, Applied Microbiology AHM 220

Second Semester (16-17 credits)

Courses	Credits
AHS 102 - Surgical Technology II	4
AHS 103 - Surgical Technology Practicum II	6
BIO 151 - Human Anatomy and Physiology II or	
AHM 105 - Body Structure/Function II	4
ENG 100 - Composition I	3

Third Semester (13 credits)

Courses	Credits
AHS 200 - Surgical Technology III	1
AHS 201 - Surgical Technology Practicum III	6
DPR 100 - Introduction to Information Technology	3

Electives

- Humanities Elective 3 Credits

Notes

This semester is offered in Summer I

Fourth Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
SOC 110 - Introduction to Sociology	3
PSY 140 - General Psychology	3
AHA 207 - Ethical/Legal Aspects of Health Care Management	3
AHM 140 - Professional and Communication Issues in Health Care	3

Total Credits: 61-63

Technical Studies, A.A.S. (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 program requirements, 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.

Required Courses

Credits

ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3

Required Electives:

- Mathematics / Accounting Electives 6 - 8 Credits
- Natural Science Elective 3 - 4 Credits
- Social Science Elective 3 Credits
- Humanities Elective 3 Credits

Notes:

Technical Core: Up to 20 credit-hours approved for prior work and life experience such as:

Apprenticeship Training, Military Training, Trade/Proprietary Education
Personalized Education Plan(PEP):

In consultation with a Technical Studies advisor, the student must satisfy a minimum of 20 or more credit hours of coursework in a concentrated area of study in order to fulfill an employment need, or to work toward a personal, or a professional career goal. A typical PEP component could be selected with a concentration, or an emphasis of study approved by the Technical Studies Coordinator, and the appropriate division dean as suggested below:

I. Technical/Industrial Emphasis Courses selected in:

Automotive
Drafting and Design
Computer Science
Engineering
Automation/Robotics
Architectural/Construction
Heating, Ventilation and Air Conditioning
Machine Tool Technology
Electrical
Mathematics - MAT 110 or above is required

II. Computer Technology Emphasis Courses selected in:

Computers in Problem Solving
Computer Languages
Computer Operations
Computer Service
Computer Programming
Microcomputers
CAD/CAM
Other specialized computer courses

III. Entrepreneurship/Management Emphasis Courses selected in:

Introduction to Business
Emergency Management and Planning
Public Safety
Business Law
Principles of Management
Mathematics / Accounting - MAT 100 or MATH 105 and ACC 100 or ACC 111 may be chosen
Human Behavior/Psychology
Marketing Supervision
Advertising
Sales
Economics
Other specialized entrepreneurship/management courses

Total Credits: 60

CAREER PROGRAMS

Leading to a Certificate

Accounting (Professional), Certificate (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:

- Explain the importance of recognizing, measuring and reporting 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.

Required Courses

Credits

ACC 251 - Intermediate Accounting I	3
ACC 252 - Intermediate Accounting II	3
ACC 253 - Advanced Accounting	3
ACC 254 - Auditing	3

Program Electives

Credits

ACC 115 - Computerized Accounting	4
ACC 210 - Federal Income Tax Accounting	3
BUS 220 - Elementary Statistics	3
BUS 243 - Legal Environment of Business	3

Notes:

Students who lack adequate foundation courses are required to take the following courses: ACC 111 Financial Accounting 3 ACC 112 Managerial Accounting 3 An Associate in Applied Science degree is also available.

Automotive Technology I, Certificate (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 out-lined below. Program completers will be prepared to seek positions as entry-level automotive service technicians and automotive mechanics.

Upon successful completion of this program, the student 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.

Required Courses

Credits

AUT 100 - Introduction to Automotive Service Operation and Shop Practices	2
AUT 101 - Automotive Electricity and Electronics	4
AUT 102 - Automotive Engines	4
AUT 103 - Brake Systems	4
AUT 114 - Steering and Suspension	4
AUT 115 - Fuel I and II	2

Total Credits: 20

Automotive Technology II, Certificate (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, the student should be able to:

- Define OBD (On-Board Diagnostics).
- 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 O2 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.

Required Courses

Credits

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

Total Credits: 21

Carpentry (Finish), Certificate (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 the program, the student 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.

Required Courses

	Credits
CPT 154 - Introduction to Doors and Windows - Residential	3
CPT 162 - Introduction to Interior Trim, Walls and Ceilings	4
CPT 161 - Introduction to Staircase & Balconies	4
CPT 163 - Introduction to Basic Floor Systems	3
TCS 100 - Construction Blueprint Reading	3

Total Credits: 21

Carpentry (Residential), Certificate (CPT)

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, the student 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 fanfold 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.

Required Courses

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

Program Electives

	Credits
CPT 153 - Advanced Furniture Building	2
CPT 150 - Introduction to Cabinetmaking	2
CPT 151 - Furniture Building	2
CPT 152 - Home Remodeling/Additions	2

Total Credits: 26

Child Development Associate, Certificate (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.

Required Courses

	Credits
ECE 100 - Principles of Early Childhood Education	3
ECE 110 - Infant/Toddler Care and Education	3
ECE 111 - Methods and Materials for Teaching II	3
ECE 112 - Developing a Professional Portfolio and Resource File for ECE	1

Total Credits: 10**CNC Programming - Lathe & Mill, Certificate (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, the student 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.

Required Courses

	Credits
MTT 210 - CNC Machine Tool Operations	3
MTT 220 - CNC Programming	3
TME 229 - Fluid Power and Controls	4
TCC 121 - Project Management Processes	3

Total Credits: 16**Computer-Aided Drafting, Certificate of Competency (DDTC)**

In this program, students will learn to manage computer systems for drawing production, information storage, retrieval and communication in the engineering and design workplace. As they develop computer aided drafting skills, they will explore manufacturing, mechanical, and architectural engineering and construction applications.

This program is intended, 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. However, though there is no requirement of prior technical experience, individuals desiring an elementary introduction to the fields of engineering drafting, and design will be well served by this curriculum.

Students may, through the use of specified course alternatives, choose to pursue a basic 2D option with added emphasis in elementary blueprint reading and construction applications, or a 3D parametric modeling option with emphasis on advanced software features and mechanical / manufacturing applications.

All credits earned in this certificate are applicable to the Associate of Applied Science Degree in Computer Aided Drafting and Design.

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, multiview, assembly and 3D model drawings.

First Semester (15 credits)

Courses	Credits
TCC 112 - CADD Graphics	3
TCC 121 - Project Management Processes	3
TCC 122 - 2-D CADD	3

Notes**2D Architectural Option:**

TCS 100 Construction Blueprint Reading - 3 credits ARC 121 Architectural Graphics I - 3 credits

OR

3D Engineering Modeling Option:

TDD 216 Three-D CADD - 3 credits TDD 227 Advanced CADD - 3 credits

Total Credits: 15**Computer-Aided Machining Lathe, Mill and EDM, Certificate (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. The 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.

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

Mathematics for Occupational Technologies (MTT 108) or Technical Mathematics (MAT 110), Prints, Layouts, and Measurements for Machining (MTT 110), Introduction to Manufacturing (MTT 111), Lathe Operations I (MTT 112), Milling Operations I (MTT 124), Lathe Operations II (MTT 122), Milling Operations II (MTT 214), Manufacturing Processes (MTT 213), Technical Communications (TCC 111), CNC Machine Tool Operations (MTT 210), CNC Programming and Advanced Operations (MTT 220), Fluid Power and Controls (TME 229), Project Management Processes (TCC 121).

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

- Interact with hardware/software in order to create and manipulate various views as a means for appropriately displaying a 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.

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- Utilize CAM software programming options to modify cutting parameters and settings, part geometry at various points on a contour.

Required Courses	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

Required Electives:

- MTT 199 Co-op/Internship is also required 2 Credits

Total Credits: 15

Construction Supervision, Certificate (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 students 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, the student 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 job-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 (12 credits)

Courses	Credits
TCC 111 - Technical Communication	3
TCS 100 - Construction Blueprint Reading	3
TCS 108 - Construction Supervision	3

Electives

Construction Supervision Elective 3 Credits

Second Semester (13 credits)

Courses	Credits
TCS 109 - Construction Project Administration	3
MAT 110 - Technical Mathematics I	4
TCS 141 - Construction First Aid/Safety	3

Electives

- Construction Supervision Elective 3 Credits

Program Electives	Credits
TCC 112 - CADD Graphics	3
TCC 121 - Project Management Processes	3
TCC 122 - 2-D CADD	3
TCC 111 - Technical Communication	3
TCC 112 - CADD Graphics	3
TCS 131 - Estimating I	3
TCS 132 - Estimating II	3
TCS 221 - Construction Survey and Layout	3
ARC 121 - Architectural Graphics I	3
ARC 226 - Mechanical and Electrical Systems in Buildings	3
TME 216 - Statics and Strength of Material	4

Total Credits: 25

Culinary Arts, Certificate of Competency (CULC)

The Culinary Arts, Certificate of Competency prepares students for employment in various segments of the foodservice industry in positions such as restaurant chef, banquet chef, sous chef, kitchen manager, production cook, line cook and prep cook. The certificate includes courses providing skill development in kitchen lab courses, and is designed for a student who, either wants to enter the field of Culinary Arts.

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

- Demonstrate knowledge and use of foodservice and culinary terminology
- Exhibit the ability to identify various food products and their common uses
- Demonstrate various cooking methods and appropriate presentation techniques
- Properly use and care for professional foodservice equipment and culinary tools
- Produce foods that meet employers' standards and satisfy consumer demands
- Exhibit ability to produce various ethnic and regional cuisines
- Apply principles of good nutrition in producing foods that meet consumer demands
- Demonstrate knowledge of safe food handling practices; receive food handlers' sanitation certification
- Seek successful employment in a wide variety of commercial and non-commercial foodservice operations

Required Courses	Credits
CUL 115 - Professional Cooking I	3
CUL 150 - Baking & Pastry Foundations I	3
CUL 151 - Baking and Pastry Foundations II	3
CUL 210 - Foodservice Purchasing	3
CUL 215 - Menu Planning & Cost Control	3
CUL 220 - Nutrition and the Hospitality Industry	3
CUL 230 - Professional Cooking II	3
CUL 231 - Garde Manger	3
CUL 232 - International Cuisine	3

Total Credits: 27

Early Childhood Director, Certificate (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, students 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.

Required Courses

Credits

ECE 290 - Administration and Supervision of Early Care and Education Environments	3
ECE 291 - Current Issues and Trends in Early Care and Education	3
ECE 293 - Financial Strategies for the Business of Early Care and Education . . .	3

Total Credits: 9

Electrical, Certificate (ELT)

This hands-on industry concentrated program is designed to train individuals in the safe, proper and efficient installation, troubleshooting and service of electricity and its associated equipment and wiring. This program stresses all of the basic elements most often encountered by electricians in residential, commercial, and industrial settings including direct current applications, national code practice, and photovoltaic solar. 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 an electric 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.
- 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.

Required Courses

Credits

ELT 104 - Introduction to Electricity	4
ELT 101 - Residential Wire	4
ELT 205 - Advanced Residential Wire	4
ELT 152 - Electrical Code	2
ELT 206 - Commercial Wire	4
ELT 207 - Industrial Wire	4
ELT 208 - Solar Photovoltaic System Design and Installation	4
TCS 141 - Construction First Aid/Safety	3

Total Credits: 29

Emergency Medical Technician, Certificate of Competency (EMTC)

The Emergency Medical Technician, Certificate of Competency prepares students to function as an entry level Emergency Medical Technician. The student will learn to evaluate scene safety, assess a patient's medical or trauma condition and how to treat and transport a patient safely to an appropriate medical facility. In addition, the student will be introduced to the skills and knowledge needed to develop an understanding of the language of medicine.

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 33.3% growth in the need for EMT's through 2020. This data indicates that there is an ongoing need for well-trained Emergency Services personnel.

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 public service area and serve residents of Delaware and Chester Counties, and is highly compatible with the college's mission.

Upon successful completion, the student will be able to

- Assess and control hazards present to self, victim and bystanders at the scene of a pre-hospital medical or trauma event.
- Communicate patient care information in an effective, professional manner both written and verbal.
- Assess and provide emergency care to victims suffering from a medical or traumatic event.
- Analyze and prioritize patient care based on the patient assessment, which includes the recognition and stabilization of life-threatening conditions and the identification of patients who require rapid transport for definitive care.
- Describe patient conditions, anatomical landmarks and functions of the body system using correct medical terminology.

Total Credits: 12

Entrepreneurship, Certificate (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.

Required Courses	Credits
BUS 105 - Introduction to Entrepreneurship	3
BUS 106 - Entrepreneurship Seminar	1
BUS 130 - Business Communication	3
BUS 211 - Supervision	3
BUS 230 - Principles of Marketing	3
BUS 233 - Financial Planning	3
BUS 243 - Legal Environment of Business	3

Required Electives:

- Business Elective Credits 3

Total Credits: 22

Heating, Ventilation, Air Conditioning, Refrigeration, Certificate (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 program requirements, 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.

Required Courses	Credits
HVA 100 - Introduction to Heating, Ventilating, Air Conditioning and Refrigeration Electrical Fabrication	2
HVA 101 - Introduction to Refrigeration and Air Conditioning	2
HVA 103 - Advanced Refrigeration and Air Conditioning	2
HVA 104 - Practical Problems in Mathematics for HVAC&R Technicians	3
HVA 106 - Basic Piping for Contractors	2
HVA 200 - Advanced HVAC&R Electrical Fabrication	2
HVA 201 - Refrigerant Certification	2
HVA 202 - Oil/Gas Burner Service	2
HVA 203 - Heat Pump Systems	2
HVA 204 - Blueprint Reading for HVAC	2

Total Credits: 21

Human Resource Management, Certificate (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 the 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.

Required Courses	Credits
BUS 213 - Leadership	3
BUS 214 - Organizational Behavior	3
BUS 215 - Human Resource Management	3
BUS 216 - Training & Development	3
BUS 217 - Compensation & Benefits	3
BUS 218 - Labor Relations	3

Total Credits: 18

Industrial Production Technician, Certificate of Proficiency (IST)

This program is designed to provide the student with skills and knowledge relevant for preparation and advancement within entry-level positions of employment as production workers, operators, helper trainees, or helpers in varied fields of employment in industry. The program is structured to also afford a currently employed student/worker (as well as employers) with a means for developing an opportunity to explore new job responsibilities, as well as to enhance current job skills and knowledge within a company. This effort will be designed to provide an opportunity for the individual to be better prepared to avail themselves of career advancement opportunities as they are encountered. The program provides for a formalized integration of collegiate level course work, and at the same time, complements this education with formalized

College Sponsored Experienced Learning (CSEL) "on-the-job" (OJT) learning/training. Experiential learning will consist of a formally structured training plan, having been developed with a respective employer, and, an appropriately identified college advisor, as well as the student.

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

- Assimilate personal, and diverse group job assignment activities in a meaningful way, for personal and work related decision making.
- Combine classroom learning with OJT experiences in order to become a more effective and efficient worker, as well as to demonstrate an ability to learn on the job; and, apply progressive thinking.
- Establish personal and workplace objectives, and develop a personal plan for goals attainment within the workplace.
- Identify/utilize basic materials, tools, equipment, and processes relevant to job completion.
- Discuss aspects of workplace health, safety, and the environment.
- Demonstrate note taking techniques, applicable to specific workplace skills and knowledge.
- Complete written reports and record-keeping activities, to include job related observations, and evaluations.
- Perform basic mathematical calculations relevant to problem solving in industry.
- Relate varied processes typically found in an industrial production/manufacturing environment.

First Semester (34 credits)

Courses	Credits
BUS 246 - Teamwork	3
ENG 100 - Composition I	3
INT 100 - Student Success	3
MAT 110 - Technical Mathematics I	4
MTT 108 - Mathematics for Occupational Technologies	3
MTT 213 - Manufacturing Processes	3
PCT 110 - Safety, Health and the Environment	3
TCC 111 - Technical Communication	3
TME 115 - Basic Technical Skills	3

Notes

For this curriculum, TME 115 may be substituted for MTT 110; TME 115 will be acceptable as a prerequisite for MTT 213, in-lieu of MTT 110.

Total Credits: 34

Industrial Systems Technology, Certificate (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, the student 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

Required Courses

	Credits
IST 100 - Introduction to Industrial Systems Technologies	3
TME 115 - Basic Technical Skills	3
TCC 111 - Technical Communication	3
TEL 101 - D C Analysis	4
MTT 108 - Mathematics for Occupational Technologies	3

Total Credits: 16

Interactive Multimedia, Certificate (IMMC)

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.

Required Courses

	Credits
IMM 100 - Interface Design and Rapid-Prototyping	3
IMM 110 - Multimedia Graphics & Design	3
IMM 201 - Audio & Video for Multimedia	3
IMM 205 - Flash	3
IMM 202 - Multimedia Authoring	3

Total Credits: 15

Machining Operations Level I, Certificate (MTC1)

This certificate is designed to prepare the student for entry-level positions in manufacturing environments utilizing conventional machining equipment. Concepts covered include mathematical applications in machining, drawings as a communication tool, and exposure to a variety of equipment used in manufacturing. Program completers will be prepared to seek positions as entry-level inspectors, or lathe, milling, drilling, or grinding machine operators/machinists.

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

- Perform English and Metric computations involving numeric and literal problems.
- 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.
- Elaborate on the reading of operational notes and annotations on a drawing using trade terminology
- Compare and contrast hardness and machinability ratings.
- Demonstrate procedures for set-up and operation of various sawing, drilling, offhand, and surface grinding machines.
- Set-up and operate a conventional engine lathe to complete intermediate to advanced operations involving trepanning, tool post grinding, radius-turning devices, threading (tap/die) heads, steady, and follower rests.
- Select accessories and attachments, set-up and use face plates, independent, universal, and combination chucks, collect attachments, and a steady rest to facilitate internal surface feature creation such as radii, bores (straight, and tapered), grooves, and chased threads on a lathe.
- Perform machine head/table and workholding device alignments.
- Calculate and set speeds and feeds, and perform drilling, milling, grinding and other machine operations.

Required Courses	Credits
MTT 108 - Mathematics for Occupational Technologies	3
MTT 110 - Print Layout and Measurement for Machining	4
MTT 111 - Introduction to Manufacturing	3
MTT 112 - Lathe Operations I	3
MTT 124 - Milling Operations I	3

Notes:

MTT 199 Optional Co-op / Internship 3 Credits

Total Credits: 16

Machining Operations Level II, Certificate (MTC2)

This certificate is designed to prepare the student for above entry-level positions in the occupational specialty of conventional and Computer Numerical Control lathe and milling machine operations.

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

- 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.
- Create internal features to include chamfers, bores, recesses, counterbores, countersinks, grooves and pockets using a milling machine.
- Set-up and use various style cutters to create form (profile) geometry.
- Perform geometric/algebraic/trigonometric calculations to machine for set-up and inspection of parts, to include chamfers, tapers, threads, etc.
- Develop a process plan, to include job/operations tooling, and inspection procedure a review of reference materials in order to perform machining a basic lathe piece-part.
- Distinguish between the common surface treatments and finishing processes.
- Relate the classifications of production systems and the impact automation has for each.
- 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.
- Summarize the concepts and criteria for reducing costs and increasing productivity on the shop floor.
- Utilize welding, melting, casting, and molding equipment.
- Demonstrate appropriate terminology, mechanics, usage, and style while communicating technical information.
- Develop computer integrated graphical documents to prepare technical correspondence and presentations.

Required Courses

	Credits
MTT 122 - Lathe Operations II	3
MTT 214 - Milling Operations II	3
MTT 210 - CNC Machine Tool Operations	3
MTT 213 - Manufacturing Processes	3
TCC 111 - Technical Communication	3

Notes:

MTT 199 Optional Co-op / Internship 3 Credits

Students seeking to pursue this certificate program must meet the following Prereqs.
MTT 108, MAT 110, MTT 110, MTT 111, MTT 112, MTT 124

Total Credits: 15

Manufacturing Operations, Certificate (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 demanding work assignment. The program is intended for students who seek above entry-level positions.

Upon successful completion of this curriculum, 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 to machine for set-up and inspection of parts, to include chamfers, tapers, threads, etc.
- Develop computer integrated graphical documents to prepare technical correspondence and presentations.

First Semester (16 credits)

Courses	Credits
MTT 110 - Print Layout and Measurement for Machining	4
MTT 111 - Introduction to Manufacturing	3
MTT 112 - Lathe Operations I	3
MTT 124 - Milling Operations I	3
MAT 110 - Technical Mathematics I	4

Second Semester (18-19 credits)

Courses	Credits
MTT 122 - Lathe Operations II	3
MTT 214 - Milling Operations II	3
MTT 213 - Manufacturing Processes	3
TCC 111 - Technical Communication	3

Electives

- General Education Options (6 credits minimum required) 6-7 Credits

Program Electives	Credits
MAT 111 - Technical Mathematics II	4
ENG 100 - Composition I	3
ENG 112 - English Composition II: Writing About Literature	3
HIS 120 - American History II	3
ECO 220 - Microeconomic Principles	3

Notes:

MTT 199 Co-op / Internship 3 Credits

Total Credits: 34-35

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 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 students are required to sit for the National Certification Examination offered by the American Association of Medical Assistants (AAMA) at a designated time during enrollment in the Medical Assistant Practicum (AHM 199). 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 results of a complete physical examination including: laboratory tests, a complete blood count, seasonal influenza vaccine, a 10-panel urine drug screen, and a two-step PPD prior to beginning the clinical component of the program. Please refer to the pre-entrance medical record health form requirements from the Program Director. Additionally, students must have medical health insurance and be in compliance with recommendations for the Hepatitis B vaccine. Full CPR certification is required and you must submit a signed photocopy (both sides) of the CPR Certification Card. For example, acceptable CPR courses are the "Health Care Provider" (American Heart Association) or "Courses for the Professional" (American Red Cross) which are renewable every two years. Documentation of completion of the above must be on file in the Allied Health, Emergency Services and Nursing Department prior to entering the Medical Assistant Practicum (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.

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

Upon successful completion of the curriculum, the medical assistant 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.

First Semester (16 credits)

Courses	Credits
ENG 100 - Composition I	3
AHM 233 - Medical Terminology	3
AHM 104 - Body Structure/Function I	3
DPR 100 - Introduction to Information Technology	3
AHM 106 - Medical Assistant Techniques and Practicum I	4

Second Semester (14 credits)

Courses	Credits
AHM 105 - Body Structure/Function II	3
AHM 107 - Medical Assistant Techniques and Practicum II	4
AHM 130 - Medical Coding Concepts for Allied Health	3
AHM 220 - Applied Microbiology	1
ENG 112 - English Composition II: Writing About Literature	3

Third Semester (7 credits)

Courses	Credits
AHM 140 - Professional and Communication Issues in Health Care	3
AHM 185 - Medical Office Management	4

Notes

SUMMER II - AHM 199 Medical Assistant Practicum 6 Credits

Total Credits: 43

Medical Billing, Certificate (MB)

The Medical Billing 18 college-credit certificate program provides students with the skills necessary to function as medical billers for all types of health care institutions. The curriculum includes medical terminology, health informatics, analysis of coded data used on claims for reimbursement, and principles of medical billing.

A Certificate of Competency in Medical Billing will be awarded upon completion of this curriculum with a 2.0 GPA and a "C" or a better in all allied health courses.

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

- Document billing information using correct medical terminology.
- Describe legal and ethical issues involved in medical billing.
- Recall different types of health insurance carriers and reimbursement systems as well as rules and regulations for each.
- Complete insurance related forms and financial reports.

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- Describe the follow up process with insurance companies and patients regarding unpaid bills.
- Describe the major health care organizations and agencies and their role in the health care delivery system.
- Demonstrate an understanding of the issues and practices applicable to health information.

First Semester (12 credits)

Courses	Credits
DPR 100 - Introduction to Information Technology	3
AHM 102 - Introduction to Health Care	3
AHM 233 - Medical Terminology	3
AHM 130 - Medical Coding Concepts for Allied Health	3

Second Semester (6 credits)

Courses	Credits
AHM 185 - Medical Office Management	4
AHM 241 - Medical Billing	3

Total Credits: 18

Medical Coding and Billing for Healthcare Professionals, Certificate (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 Billing 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.
- Demonstrate an understanding of the issues and practices applicable to health information.

Required Courses

	Credits
AHM 102 - Introduction to Health Care	3
AHM 230 - Introduction to ICD-9-CM Coding Principles	3
AHM 231 - Introduction to CPT-4 Coding	3
AHM 240 - Hospital Coding and Case Studies	3
AHM 232 - Advanced CPT-4 Coding	3
AHM 241 - Medical Billing	3

Total Credits: 18

Medical Coding and Billing, Certificate (MC)

The Medical Coding and Billing Certificate of Proficiency 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 is used on claims for reimbursement, patient care management, and healthcare evaluation and research. The curriculum includes medical terminology, human anatomy, pathophysiology, pharmacology, administrative medical office management, electronic health records, and CPT and ICD coding. The graduate of this certificate may sit for the Certified Coding Associate (CCA) certification offered by AHIMA (American Health Information Management Association). After completing CCA exam and / or working in the field, students qualify to take the Certified Coding Specialist (CCS) or Certified Coding Specialist - Physician Based (CCS-P) exam offered by AHIMA.

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 (AHA, AHM) courses. The courses are listed with a start date of Spring semester but students may begin courses in Fall, Spring, or Summer semesters.

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.
- Use appropriate terminology to discuss ethical/legal issues in healthcare.
- Analyze common theories and methods used in making ethical decisions.
- Identify the route of administration, indications, adverse effects, and related laboratory studies for commonly used medications.
- Explain the disease process, and concepts of pain assessment and management.
- List and experiment with specific methods to improve study skills.
- Implement an effective management style to improve organization, coordination and use of time.
- Evaluate various specialties of coding and compare and contrast the different specialties.
- Create a portfolio to demonstrate professional skills to enhance marketability for employment.

First Semester (12 credits)

Courses	Credits
ENG 100 - Composition I	3
AHM 233 - Medical Terminology	3
AHM 104 - Body Structure/Function I	3
INT 100 - Student Success	3

Second Semester (6 credits)

Courses	Credits
AHM 105 - Body Structure/Function II	3
AHM 102 - Introduction to Health Care	3

Third Semester (3 credits)

Courses	Credits
AHM 230 - Introduction to ICD-9-CM Coding Principles	3

Fourth Semester (13 credits)

Courses	Credits
AHM 231 - Introduction to CPT-4 Coding	3
AHM 208 - Pathophysiology and Pharmacology	4
AHM 202 - Fundamentals of Health Information Technology Science	3
DPR 100 - Introduction to Information Technology	3

Fifth Semester (12 credits)

Courses	Credits
AHM 232 - Advanced CPT-4 Coding	3
AHM 241 - Medical Billing	3
AHM 240 - Hospital Coding and Case Studies	3
AHA 207 - Ethical/Legal Aspects of Health Care Management	3

Sixth Semester (3 credits)

Courses	Credits
AHM 242 - Virtual Professional Practice Experience Capstone	3

Total Credits: 49**Mobile Computing, Certificate of Proficiency (MOBC)**

Mobile Computing involves the development and deployment of specialized software and technologies that enable mobile and hand-held computing devices to function. These devices include mobile phones, smart phones, tablet-devices, ebook readers and other portable personal technology devices. This program is designed to prepare students with the knowledge and skills needed to enter the mobile computing field. Students prepare for careers in a variety of entry-level positions such as mobile app developer, software developer, programmer, and mobile game developer. The certificate builds a solid foundation of programming and design skills and introduces the specific skills needed for developing mobile/wireless applications for iOS, Android, and general web display with HTML. Students gain an understanding of mobile/wireless technologies and how these technologies are utilized and integrated to meet specific business needs. Current technologies and architectures that provide the network and communications infrastructure for mobile enabled systems are also covered. Students will learn to design mobile user interfaces and apply standards to create intuitive, usable and efficient applications.

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

- Understand current technologies and architectures that provide the network and communications infrastructure for mobile enabled computer systems
- Define and identify the importance, types and uses of various mobile devices
- List the various operating systems used in mobile devices and discuss their advantages and disadvantages
- Apply appropriate user interface design techniques and standards to create intuitive, usable and efficient designs
- Identify the appropriate development tools, IDEs and emulators for creating and publishing various mobile applications and web sites
- Design and create web sites for display on a variety of different mobile devices and screens

- Design and create applications for smart-devices using iOS and Android OS frameworks and relevant programming languages
- Describe the standards and processes for submitting apps for distribution through the Apple App Store and Android Apps on Google Play
- Identify careers related to mobile computing and examine requisite skills

First Semester (12 credits)

Courses	Credits
DPR 108 - Introduction to Computer Science	3
IMM 100 - Interface Design and Rapid-Prototyping	3
IMM 120 - Web Page Development	3
IMM 110 - Multimedia Graphics & Design or	
DPR 236 - Game Art & Animation	3

Second Semester (12 credits)

Courses	Credits
DPR 213 - iPhone and iPad App Development using Objective-C	3
DPR 224 - Android App Development	3
IMM 205 - Flash	3
DPR 241 - Mobile Web Development	3

Third Semester (13 credits)

Courses	Credits
DPR 214 - jQuery/Java Script	3
DPR 205 - Introduction to Java Programming	4
ENG 100 - Composition I	3
MAT 100 - Intermediate Algebra	3

Notes

May take MAT 100 or higher - 3 credits

Total Credits: 37**Municipal Police Academy, Certificate (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, the student 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 major provisions 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 Constitutional and other legal requirements for arresting an individual or taking the individual into custody.

- 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.
- 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.
- Apply principles of emergency medical care to crisis situations.
- List emergency medical problems confronted by police officers.
- Describe various violent and dangerous situations, more particularly those involving domestic disputes, mentally ill individuals and violent criminals.
- Identify proper procedure to handcuff suspects or prisoners.

First Semester (23 credits)

Courses	Credits
MPT 100 - Introduction to Law Enforcement	2
MPT 101 - Professional Development	4
MPT 102 - Law and Procedures	3
MPT 104 - Vehicle Code	2
MPT 106 - Patrol Procedures and Operations	3
MPT 107 - Principles of Criminal Investigation	3
MPT 204 - Firearms	3
MPT 207 - Emergency Response Training	3

Second Semester (13 credits)

Courses	Credits
MPT 105 - Motor Vehicle Collision Inspection and Related Issues	1
MPT 103 - Law and Procedures II	3
MPT 200 - Human Relations	2
MPT 202 - Crisis Management	2
MPT 205 - Operation of Patrol Vehicles	2
MPT 206 - Report Writing/Case Preparation	2
MPT 208 - Handling Arrested Persons	1

Total Credits: 36**Paralegal Studies, Certificate (CPLG)**

This program is approved by the 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 earned 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 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, 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.

Required Courses

	Credits
PLG 100 - Introduction to Paralegal	3
PLG 110 - Legal Research & Writing I	3
PLG 120 - Legal Research & Writing II	3
PLG 140 - Contract Law	3
PLG 200 - Family Law	3
PLG 210 - Civil Litigation and Tort Principles	3
PLG 211 - Civil Litigation and Tort Applications	3
PLG 220 - Real Estate Law	3
PLG 230 - Estates, Trusts and Wills	3

Required Electives:

- PLG 199 Co-op / Internship or Paralegal Elective 3 Credits

Notes:

Associate's or Bachelor's degree required. An Associate in Applied Science degree is also available.

Total Credits: 30**Perioperative Nursing, Certificate (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, coursework 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.

Required Courses

	Credits
NUS 205 - Perioperative Nursing	3
NUS 206 - Perioperative Preceptorship	3
NUS 207 - RN First Assistant	3
NUS 208 - RN First Assistant Internship	3

Required Electives:

- Health Care Management Elective 3 Credits

Total Credits: 15

Photography, Certificate (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.

Required Courses	Credits
ART 160 - Black and White Photography I	3
ART 161 - Black and White Photography II	3
ART 162 - Black and White Photography III	3
ART 169 - Medium and Large Format Photography	3
ART 166 - Black and White Digital Negative or	
ART 175 - Color Photography and the Digital Printing Workflow	3

Total Credits: 15

Plumbing Apprenticeship, Certificate (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.

Required Courses	Credits
PLB 100 - Plumbing Theory I	5
PLB 101 - Plumbing Theory II	5
PLB 102 - Math for Plumbers	5
PLB 103 - Installation & Repair	5
PLB 104 - Bathroom Installation	1
PLB 200 - Heating Systems	2
PLB 202 - Blueprint Reading	3
PLB 207 - Cross Connection Control	3
PLB 208 - Philadelphia Plumbing Codes	3
PLB 209 - International Plumbing Codes	5

Total Credits: 37

Process Control Technology I, Certificate (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, petrochemical, chemical, and pharmaceutical manufacturing, as well food products 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, the student 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 product 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.

Required Courses	Credits
PCT 101 - Introduction to Process Technology	4
PCT 100 - Plant Equipment	3
PCT 110 - Safety, Health and the Environment	3
TCC 111 - Technical Communication	3
MAT 110 - Technical Mathematics I	4
CHE 105 - Technical Chemistry	3

Total Credits: 20

Process Control Technology II, Certificate (PCTP)

This certificate is designed to provide students with the necessary skills and knowledge to seek above entry-level positions of employment as Process Operators/Technicians within the various Processing Industry fields. Process Operators/Technicians are employed within industries where refining, compounding, and mixing operations are commonly performed as part of a continuous-flow, semi-automated, or automated production method. Continuous-flow production industries include; petroleum refining, petrochemical, 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.

Prerequisite Courses:

- PCT 101 - Introduction to Process Technology
- PCT 100 - Plant Equipment
- PCT 110 - Safety, Health and the Environment
- DPR 100 - Introduction to Computers
- MAT 110 - Technical Mathematics I
- CHE 106 - Introduction to Chemistry

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

- Classify various production units within a processing plant, and describe their operating parameters.
- Discuss the principles of operation for the 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 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.

First Semester (17 credits)

Courses	Credits
ENG 100 - Composition I	3
MAT 111 - Technical Mathematics II	4
PHY 100 - Technical Physics I	3
PCT 111 - Process Control I	4
BUS 214 - Organizational Behavior	3

Second Semester (15 credits)

Courses	Credits
TME 229 - Fluid Power and Controls	4
PHY 101 - Technical Physics II	3
PCT 115 - Process Control II	4
PCT 120 - Unit Operations	4

Total Credits: 32

Small Business Management, Certificate (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 30 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 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, the student 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.

First Semester (15 credits)

Courses	Credits
ENG 100 - Composition I	3
BUS 149 - Small Business Management	3
BUS 230 - Principles of Marketing	3
ACC 100 - Applied Accounting	3
BUS 110 - Sales and Sales Supervision	3

Second Semester (15 credits)

Courses	Credits
ENG 112 - English Composition II: Writing About Literature	3
BUS 233 - Financial Planning	3
BUS 231 - Principles of Advertising	3
BUS 211 - Supervision	3

Electives

- Business Elective or Co-op / Internship 3 Credits

Notes:

An Associate in Applied Science degree is also available.

Total Credits: 30

Theatre Arts, Certificate (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 successful completion of this program, the student 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.

First Semester (16 credits)

Courses	Credits
DRA 100 - Introduction to Theatre	3
DRA 110 - Acting I	3
DRA 111 - Acting II	3
DRA 116 - Stagecraft	3
DRA 114 - Theatre Arts Practicum	1

Electives

DRA Elective 3 Credits - Choose one of the following:

Program Electives	Credits
DRA 105 - Acting Shakespeare	3
DRA 130 - Voice and Movement	3
ENG 207 - Creative Writing: An Introduction to Playwriting	3

Total Credits: 16

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 web sites using current industry standards. Designing and developing responsive web applications for display on mobile and desktop devices is also emphasized. Students also gain a foundation in current networking technologies and supporting Linux/UNIX systems.

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

- Plan for a professional web site including graphics design, structural analysis and data gathering.
- Create web sites using current HTML and CSS standards.
- Create responsive web applications that display appropriately on a variety of mobile, tablet, laptop and desktop screens.
- Incorporate scripting languages into web developments to add control and interactive elements
- Understand and support current Linux/UNIX systems.
- Understand and apply the fundamentals of networking including the OSI model, network protocols, transmission media, topologies, hardware, software, WAN's, remote connectivity, security, and TCP/IP.

First Semester (12 credits)

Courses	Credits
DPR 108 - Introduction to Computer Science	3
NET 110 - Network Communications	3
DPR 141 - UNIX Operating Systems	3
IMM 120 - Web Page Development	3

Second Semester (9 credits)

Courses	Credits
DPR 241 - Mobile Web Development	3
DPR 206 - Programming for the Web	3
DPR 214 - jQuery/Java Script	3

Total Credits: 21

Welding, Certificate (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.

Required Courses	Credits
WLD 100 - Introduction to Welding	2
WLD 101 - Introduction to Oxy-Fuel Welding and Cutting	2
WLD 102 - Oxy-Fuel Welding	2
WLD 103 - Shielded Metal Arc Welding I	2
WLD 104 - Shielded Metal Arc Welding II	2
WLD 105 - Intermediate Shielded Metal Arc Welding I	2
WLD 106 - Intermediate Shielded Metal Arc Welding II	2
WLD 200 - Gas Metal Arc I	2
WLD 201 - Gas Metal Arc II	2
WLD 202 - Advanced Shielded Arc I	2
WLD 203 - Advanced Shielded Arc II	2
WLD 204 - Gas Tungsten Arc I	2
WLD 205 - Gas Tungsten Arc II	2

Required Electives:

Electives in Welding Occupations 2 Credits - Choose one of the following:

Program Electives	Credits
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 Credits: 28

ELECTIVES

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 214, BUS 215, BUS 220, BUS 230, BUS 231, BUS 232, BUS 243. Under special circumstances other courses in ACC, BUS and CIS/DPR may be permitted as electives when recommended by the advisor and approved by the dean.
- B. For career programs: courses listed as ACC, BUS, CIS/DPR, HRM, IMM, NET, and PLG

2. Computer Electives

- A. For college transfer curricula*: CIS/DPR 100, CIS/DPR 105, CIS/DPR 108, CIS/DPR 113, CIS/DPR 205, CIS/DPR 222, CIS/DPR 226
- B. For career programs: courses listed as CIS/DPR, IMM and NET

3. Humanities Electives

- A. For college transfer curricula*: courses listed under ARB, ART, ASL, CHI, DRA, ENG 113 or above, FRE, GER, HUM, ITA, MUS, PHI, RUS, SPA and COMM courses listed 100 or above.
- B. For career programs: courses listed under ARB, ART, DRA, ENG 113 or above, FRE, GER, HUM, ITA, MUS, PHI, RUS, SPA and COMM.

4. Social Science Electives

- A. For college transfer curricula*: ADJ 240, ADJ 260, ECO 210, ECO 220, EDU 110 or above, HIS 100 or above, INT 100, POL 110 or above, PSY 140 or above, SOC 110 or above.
- B. For career programs: all ADJ, ECE, ECO, EDU, HIS, INT 100, POL, PSY, SOC courses.

5. Science Electives

- A. For the Mathematics/Natural Science Curriculum (as laboratory sciences): BIO 110, BIO 111, BIO 115, BIO 200, BIO 210, BIO 230 (not Bio 150, 151 or 220), CHE 110 or above, ESS 110 or above, PHY 110 or above. (As electives): BIO 110 or above, CHE 110 or above, ESS 110 or above, PHY 110 or above.
- B. For the Science for Health Professions Curriculum (as laboratory sciences): BIO 110 or above, CHE 101, 102, 110 or above, PHY 110, or above.
- C. For college transfer curricula*: BIO 100 or above, CHE 101, 102, 110 or above, ESS 100 and above, PHY 105 and above, SCI 100 and 110.
- D. For career programs: BIO, CHE, ESS, PHY, SCI.

6. Mathematics Electives

- A. For the Mathematics/Natural Science Curriculum: MAT 151 or above.
- B. For the Science for Health Professions Curriculum: MAT 100 or above.
- C. For college transfer curricula: MAT 100 or 120 or above; MAT 125 & 126 only for elementary education.
- D. For career programs: MAT 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.

5/20/13

* The elective courses listed above for transfer curricula are generally transferable to most institutions. However, depending on the program at the transfer institution, the courses may only be accepted as free electives. Be sure to meet with a transfer advisor when planning to transfer.



Students make use of the College's new Learning Commons, which opened in 2013.

COURSE DESCRIPTIONS

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 060

3 Credits

3 Weekly Lecture Hours

ACC 112 Managerial 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 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

4 Weekly Lecture Hours

ACC 201 Introduction to Cost Accounting

This course provides students with a thorough understanding of cost accounting concepts, cost behaviors, and cost accounting techniques as applied to manufacturing cost systems.

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

- Interpret the purpose of cost accounting and the uses of cost accounting data. Define the three basic elements of cost.
- Using the process and job cost systems, record the complete accounting cycle. Apply factory overhead to work in progress production units.
- Define factors to be considered in establishing standard costs.
- Compute and analyze variances from standard using the two variances methods. Determine the basis and calculate cost allocations.
- Prepare budgets and variance analysis.

Prereq. ACC 100 or 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 in the accounting curriculum and an elective 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 satisfactory 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.

3 Credits

3 Weekly Lecture Hours

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 successful 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 lessee and lessor.
- 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

ACC 253 Advanced Accounting

This course is an in-depth study of selected accounting topics, including partnerships, consolidations, business combinations, bankruptcy, corporate reorganizations and multinational companies. It presents both the theoretical and applied aspects of these topics. CPA problems will be reviewed.

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

- Discuss the environmental factors and the underlying theoretical structure related to the accounting discipline.
- Prepare consolidated financial statements under a variety of circumstances.
- Properly record and report the domestic firms transactions that are denominated in foreign currency.
- Explain accounting for partnerships from formation to dissolution.
- Record events and exhibit results in the specialized area of governmental accounting.
- Explain the accounting procedures for nonprofit organizations such as universities, hospitals, and voluntary health and welfare organizations.
- Complete accounting procedures unique to estates and trusts.

Prereq. ACC 252

3 Credits

3 Weekly Lecture Hours

ACC 254 Auditing

An intensive course that integrates accounting standards, accounting systems, internal accounting controls, and the dual auditing functions of investigating and reporting all within the context of the professional practices environment.

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

- Define and discuss the social functions of auditing, the structure of authoritative standards, professional ethics and legal liability.
- Discuss the conceptual structures that underlie the audit process by establishing the linkage between the risk of material misstatement of financial statements and the evidence that the auditor gathers to reduce audit risk to an acceptable level.
- Discuss the planning phase of the audit engagement.
- Describe the study and evaluation of internal accounting controls.
- Describe common substantive audit tests for items such as cash, inventory and accounts receivable.
- Prepare various types of reports that can be issued in an audit of financial statements.
- Prepare special reports such as forecasts and projections.
- Discuss compilations and review services for nonpublic companies.

Prereq. ACC 252

3 Credits

3 Weekly Lecture Hours

(ADJ) Admin. Of Justice

ADJ 101 Introduction to Criminal Justice

A study of the agencies, processes and people involved in the criminal justice administration. Legislatures, law enforcement, prosecutor and defense counsel, courts, corrections and private security are studied with respect to function, role and the problems of justice administration in a democratic society, with emphasis on intercomponent relations, checks and balances, and discretionary powers.

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

- Describe how the criminal law changes to help achieve the social order in our society.
- Evaluate the historical contributions to our present Anglo-American system of justice.
- Evaluate the various theories that have been proposed relative to crime as a social phenomenon.
- Identify, explain and evaluate the current process of each element of the criminal justice system in terms of their stated goals: crime prevention, arrest, prosecution and rehabilitation of the offender.
- Evaluate the historical contributions of Great Britain to our present American system of law enforcement and describe its major impact on the role, function, authority and mission of the US Criminal Justice System.

Prereq. ENG 050, REA 050

3 Credits

3 Weekly Lecture Hours

ADJ 110 Criminal Law

Criminal Law, the foundation upon which the Criminal Justice System is built, encompasses theoretical concepts from sociology, psychology, political science, philosophy, theology and economics. It affects both the people it serves and those employed by the Criminal Justice System. The legal foundations of the U. S. Criminal Justice System are introduced to the student. Criminal offenses outlined by criminal statutes are examined with specific attention to the Pennsylvania Criminal Code.

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

- Explain the importance of the criminal law in maintaining social order.
- Describe the basic components of the Criminal Justice System.
- Analyze the concept of criminal liability.
- Define the elements of specific crimes.
- Recognize the requirements of various Pennsylvania criminal statutes.
- Identify the liabilities of individuals convicted of criminal violations.
- Identify and apply the most frequently used substantive defenses to charges of criminal acts.
- Investigate the impact of the U.S. Constitution to the Criminal Justice System.

Prereq. ENG 050 and REA 050 or pass test

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. 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.

Prereq. ADJ 101

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 of 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.
- Delineate 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. ADJ 241

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.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

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 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.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

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:

- Define codes of conduct based on law and procedure.
- Identify personal beliefs as a source of personal conduct.
- Define social customs and its role in behavioral constraint.
- Identify philosophical-logical systems that define ethics.
- Organize a systematic way of clarifying ethical decisions.
- Understand the role of professional codes of ethics.
- Identify professional issues within the context of ethics.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

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.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

ADJ 241 Criminal Law Procedure and Adjudication

This course examines the historical background, traditions, and legal principles and foundations of the Criminal Justice System. Both differences and similarities inherent within the Federal and State court processes are analyzed and the procedures through which the Criminal Justice System upholds the rights and liberties of all, both victims and accused will be examined. The roles of all professionals within the Criminal Justice System will be explored. The powers and limitations of power in the Criminal Justice System demanded by the Bill of Rights and the due process clause of the U.S. constitution. An emphasis on Criminal Law will also be examined.

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

- Trace the history of the criminal courts from their respective foundations within English-based common law to the contemporary models that currently underlie judicial processes at both state and federal laws.
- Identify the fundamental philosophies, legal concepts, and terminology that underlie the contemporary American court system.
- Discuss and explain the import of individual constitutional and statutory rights upon the criminal justice system in the United States.
- Identify, examine and understand the respective professional roles of those persons who work within the criminal court system as well as those impacted by the court system: victims, defendants, and the general public.
- Discuss the major issues impacting upon the criminal court systems of today, and project how such issues will likely affect the criminal courts in the future.
- Understand and explain the procedural processes utilized by the American criminal court system.

Prereq. ENG 100, ADJ 101

3 Credits

3 Weekly Lecture Hours

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-citizen encounters.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

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.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

ADJ 261 The Youthful Offender

An in-depth study of factors that relate to juvenile delinquency, prevention, treatment and control; a multi-disciplinary orientation. 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.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

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.
- 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.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

ADJ 280 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.

Prereq. ADJ 241

3 Credits

3 Weekly Lecture Hours

(AHA) Health Administration

AHA 206 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 changed 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.

Prereq. AHA 209

3 Credits

3 Weekly Lecture Hours

AHA 207 Ethical/Legal Aspects of Health Care Management

Rapid advances in medical technology challenge legal and ethical standards, and lend to situations requiring moral decisions. This course provides the student 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 the student 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 used in making ethical decisions.
- Explore 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 209 Philosophy of Managed Care

Managed care is now mainstreamed 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 key 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.

Prereq. AHM 102, AHM 233, AHM 140, AHA 207

3 Credits

3 Weekly Lecture Hours

AHA 210 Outcomes Measurement and Management

Health care providers are constantly gathering 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 practitioners 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.

Prereq. and Coreq: AHA 209

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.

Prereq. AHA 209

3 Credits

3 Weekly Lecture Hours

AHA 217 Quality Improvement and Accreditation Process

As the health care delivery environment changes, regulatory systems have continuously evolved to meet consumer mandate 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 will present a design for performance assessment and improvement planning, goals and objectives, essential elements and a cultural climate for change. It will present a practical introduction to accreditation processes. The requirement of the Joint Commission for Accreditation of Healthcare Organizations (JCAHO), and other accrediting bodies are explored. Current accreditation trends and issues are discussed.

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 improvements 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.

Prereq. AHA 209

3 Credits

3 Weekly Lecture Hours

(AHM) Allied Health Medical

AHM 102 Introduction to Health Care

This course provides an overview of the organization, financing, regulatory and delivery of different healthcare services. The role of various health care professionals is examined. The purpose, use, maintenance, and regulations associated with health information systems is emphasized throughout the course.

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

- Describe the major health care organizations and agencies and their role in the health care delivery system.
- Identify the role of members of the health care team.
- Describe the major components involved in the payment/reimbursement process.
- Identify government payment programs.
- Describe the role of information technology on practice management.
- Define the basic terminology associated with health information and health information technology.
- Identify the legal, ethical, privacy, security and confidentiality issues and practices applicable to health information.
- List the data that are included in a health information record.
- List various measures of health care quality.

3 Credits

3 Weekly Lecture Hours

AHM 104 Body Structure/Function I

This course begins with an analysis of the structural foundation of the body and its ability to function integrating the levels of organization: chemical cellular, tissue, organ, and system. The course then emphasizes the anatomical structure, physiology, and selective disease processes specific to the integumentary, skeletal, muscular, lymphatic, circulatory, and respiratory systems. Mechanisms by which the body maintains fluid and electrolyte balance and acid base balance are also emphasized.

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

- Analyze the architectural plan of the human body as a whole, the organization of its functional units, and the mechanisms by which it performs its various activities.
- Discuss the mechanism and patterns of disease-causing pathogens and neoplasms, and the body's response to threat of injury and disease.
- Explain the function and interrelationship of fluids and electrolytes, the mechanisms by which the constancy of total body fluids is maintained, and regulation of the acid-base balance.
- Describe the structure and function of the integumentary system and major disorders of this system.
- Describe the structure and function of the skeletal and muscular systems as well as disorders of these systems.
- Describe the structure and function of the circulatory and lymphatic systems as well as disorders of these systems.
- Describe the structure and function of the respiratory system as well as disorders of this system.

Prereq or Coreq. AHM 233

3 Credits

3 Weekly Lecture Hours

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 homeostasis; 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 the 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.

Prereq or 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, outpatient office and ambulatory health care settings. 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.
- Analyze the role 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.

Prereq ENG 050, REA 050 and MAT 060

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

AHM 107 Medical Assistant Techniques and Practicum II

The course prepares students to assist the physician in the clinic, outpatient office and ambulatory health care settings. Responsibilities include administration of medications, phlebotomy, and aiding in diagnostic tests and procedures commonly performed in the medical office.

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

- Analyze the role and the responsibility of the medical assistant concerning the principles of pharmacology and drug administration.
- Classify the commonly used diagnostic laboratory procedures that are utilized in a physician's office.

- Classify the commonly used diagnostic radiological procedures that are utilized in the physician's office.
- Describe the role of the medical assistant in the recording of 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

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory 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 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 and diagnoses. Emphasis will be placed on accuracy of coding in a variety of settings.

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

- Identify and explain the organization of both the ICD-CM manual and CPT-4 manual.
- Transform descriptions of diagnostic terms and symptoms into correct ICD-CM codes.

- Transform outpatient procedures for laboratory (pathology), diagnostic testing and outpatient surgical procedures into valid CPT-4 codes.
- Follow rules and guidelines for selecting the current ICD-CM and CPT-4 codes.
- Use correct codes relating to health conditions and factors from the ICD-CM manual.
- Identify and use the HCPCS (Health Common Procedural Coding System) for Medicare patients.
- Describe the DRG system and why it is of importance.

Prereq. AHM 233

3 Credits

3 Weekly Lecture Hours

AHM 140 Professional and Communication Issues in Health Care

This course is designed to provide the student with the knowledge and skills needed to communicate effectively in the health care setting. Emphasis is on development of interpersonal skills for workplace and therapeutic communication. Among the topics covered are basic communication skills, conflict resolution, cultural awareness, confidentiality, and professionalism.

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

- Apply basic principles of communication in responding to verbal and nonverbal communication.
- Respond appropriately to issues of confidentiality in the health care setting.
- Demonstrate knowledge of federal and state health care legislation and regulations.
- Describe professionalism in relation to the health care setting.
- Explain the role of alternative and complimentary medicine in health care.
- Develop transcultural communication skills.

3 Credits

3 Weekly Lecture Hours

AHM 185 Medical Office Management

This course is structured for the Medical Assisting and other Administrative Health Professions and introduces students to the administrative procedures commonly performed in a health care setting. Emphasis on medical ethics and legal considerations, a history of medicine, communication skills, managing accounts payable and receivable, electronic health records, receptionist responsibility, operational functions and workplace dynamics will help prepare the student for entry-level office management. Coursework will be presented and completed in both manual and computerized formats, so that the student will have a more comprehensive understanding of an administrative health care facility and its procedures.

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 both with professionals and patients.
- Utilize electronic health record software applications in the health care setting.
- 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 233 and DPR 100

4 Credits

3.5 Weekly Lecture Hours
1 Weekly Laboratory Hours

AHM 199 Medical Assistant Externship

Selected clinical experiences are provided in a medical office or health care facility. This is a planned activity that must be scheduled with the coordinator 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 health care delivery system.
- Apply selected principles of biophysical and psychosocial sciences in providing assistance to the physician.
- Maintain business and patient health records.
- Discuss the fundamental concepts of disease.

6 Credits

30 Weekly Laboratory Hours

AHM 202 Fundamentals of Health Information Technology Science

This course is an introduction to the Health Information Management (HIM) profession and the patient health record. Some of the topics covered are functions of the health record, content and structure of the health record, analysis of health records and health information, health care data sets, data access and retention, storage and retrieval systems, forms and screen design, and indexes and registers. Information is presented for both the paper-based and electronic health record.

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

- Describe the purpose, structure, Code of Ethics and certification processes of the American Health Information Management Association (AHIMA)
- Differentiate the roles of Health Information Management (HIM) professionals
- Describe the workflow of records within a HIM Department
- Differentiate between the functions and uses of primary and secondary health records
- Identify the basic forms and formats for collection of patient information in various health care facilities
- Evaluate and apply principles of forms design
- Describe the purposes and techniques related to record analysis, including quantitative, qualitative, and legal
- Compare different storage and retrieval systems
- Discuss what forces are driving the adoption of electronic health records
- Identify the legal, ethical, privacy, security and confidentiality issues and practices as they apply to health information

Prereq. AHM 102

3 Credits

4 Weekly Lecture Hours

AHM 208 Pathophysiology and Pharmacology

This course provides students with opportunities to learn fundamental concepts of disease processes followed by further study of specific diseases as they relate to a developmental stage or body system. Pathophysiology, etiology, clinical manifestations, diagnostic and laboratory procedures, and treatment modalities, including pharmacology are emphasized.

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

- Explain the disease process, including causes of disease, risk factors, diagnosis, and treatment modalities.
- Explain the physiology, assessment and management of pain.
- Describe common infectious diseases and neoplasms.
- Describe common congenital diseases and mental health disorders.
- Correlate the pathophysiology with the etiology, clinical manifestations, diagnosis, and treatment of diseases for each human body system.
- Classify commonly used medications by action and body system.
- Identify the routes of administration, indications, adverse effects, and related laboratory studies of commonly used medications.

Prereq. AHM 233 and AHM 104 or BIO 150 or AHM 105

4 Credits

4 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 disease 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**

AHM 230 Introduction to ICD-9-CM Coding Principles

The International Classification of Disease, 9th Revision, Clinical Modification (ICD-9-CM) coding system is a medical classification system used to describe diagnoses and operative (surgical and invasive) procedures. This course will teach the student the skills and knowledge necessary to determine the correct ICD-9-CM diagnosis code based on a thorough review of the medical documentation. Prospective payment rates based on diagnosis-related groups (DRG's) have been established as the basis of payment for Medicare and other insurers. Proper ICD-9 coding is crucial to the correct DRG assignment and thus reimbursement.

Upon successful completion of this course, the student should be able to:

- Understand the format, conventions and characteristics of ICD-9-CM coding.
- Apply general guidelines and chapter specific guidelines to correctly assign
- ICD-9-CM codes.
- Understand the application of Official Guidelines for coding and Reporting.
- Define the steps to diagnosis coding.
- 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 231 Introduction to CPT-4 Coding

The primary focus of this course is to provide an overview of The Current Procedural Terminology (CPT-4) coding system. CPT is the coding system used to describe services provided by physicians. CPT is also used for services provided by hospital outpatient and ancillary departments, hospital emergency departments, and other health care facilities. This course also addresses reimbursement and compliance issues related to physician-based coding as well as the use of HCFA Common Procedural Coding System (HCPCS).

Upon successful completion of this course, the student should be able to:

- Define terms, phrases and abbreviations related to medical coding.
- Apply Current Procedural Terminology (CPT) coding as they pertain to identification of procedures in medical practices.
- Describe insurance carrier reimbursement systems.
- Apply legal concepts to issues of medical coding.

Prereq. AHM 233, AHM 104, AHM 105

3 Credits

3 Weekly Lecture Hours

AHM 232 Advanced CPT-4 Coding

This course is designed for students who plan to work in the medical records department of a health care facility. It is intended to provide additional in depth study of coding principles, clinical topics, and case studies to increase knowledge and skills in CPT (Current Procedural Terminology) coding. The use of HCFA Common Procedural Coding System (HCPCS) is also addressed.

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 is designed to introduce 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, and the pronunciation are emphasized. A workbook/text, audiotapes, 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.

3 Credits

3 Weekly Lecture Hours

AHM 239 Introduction to IDC-10 Coding

This course is designed to teach those interested in learning ICD-10 diagnosis coding, the basic skills required to accurately code diagnosis in ICD-10-CM. Students will learn how to interpret and apply the ICD-10-CM guidelines to properly assign diagnosis codes to patient encounters. The ICD-10-CM codebook, training manual, class-work, homework activities, and lectures will provide students with hands-on experience in assigning accurate diagnosis codes in ICD-10-CM.

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

- Describe the structure and characteristics of ICD-10-CM diagnosis coding.
- Understand the ICD-10-CM chapter guidelines as they apply to coding regulations, claim denials and approvals.
- Apply the ICD-10-CM guidelines to correctly determine diagnosis codes.

Successfully complete the final ICD-10-CM assessments with a grade of "C" or better.

3 Credits

3 Weekly Lecture Hours

AHM 240 Hospital Coding and Case Studies

This course is designed for students who plan to work in the medical records 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 233 and AHM 130 or AHM 230

3 Credits

3 Weekly Lecture Hours

AHM 242 Virtual Professional Practice Experience Capstone

This course is designed to have students apply knowledge and skills from their Medical Coding and Billing classes in a comprehensive hands-on experiential learning setting. Through this AHIMA Virtual Practicum, students will have the opportunity to use various software application programs including ATHENS Electronic Health Records software, Quadra Med Encoder Software, McKesson Horizon Master Patient Index Software and 3M Coding and Reimbursement Software. Various experts in the field will lecture on their specific subject areas. This course will also provide students with an opportunity to create a portfolio which will demonstrate employment skills to future employers.

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

- Demonstrate the ability to use computer applications and technology related to Medical Billing and Coding.
- Analyze, interpret and evaluate data in the medical record to determine correct clinical documentation to support codes used.

- Abstract data from electronic medical records and code these records with appropriate ICD-9, CPT-4 and HCPCS codes and coding from source documents.
- Interpret and evaluate data in the electronic medical record while searching for deficiencies in demographic and/or insurance information.
- Enter patient registrations and insurance information into a patient management system.
- Create new patients in the system and enter clinical and administrative data.
- Describe how compliance standards correlate with medical records and documentation guidelines.
- Evaluate various specialties of coding and compare and contrast the different specialties.
- Create a portfolio to demonstrate professional skills to enhance marketability for employment.

Prereq. AHM 230, AHM 231, AHM 232, AHM 240 and AHM 241
3 Credits **4 Weekly Lecture Hours**

(AHN) Allied Health Nursing

AHN 106 Patient Care Assisting Techniques

This course is designed to teach the student the skills necessary to function as a patient care assistant in hospitals and ambulatory care facilities. The role of the patient care assistant has evolved and expanded to include diagnostic testing skills that are performed under the supervision of the professional nurse or other licensed health professional. These skills include phlebotomy, recording electrocardiography, applying basic oxygen therapy, pulse oximetry, measuring blood glucose levels, and collection and processing various body fluids for testing.

Upon successful completion of this course, the student should be able to:

- Explain the purpose of electrocardiography as it is related to the basic anatomy and physiology of the heart.
- Perform the skills necessary to complete an electrocardiogram.
- Describe basic hematology laboratory tests and the components and function of the blood.
- Perform phlebotomy skills, including venipuncture and skin puncture correctly and successfully.
- Demonstrate proper technique in obtaining blood glucose measurements and other components of blood obtained through skin puncture.
- Explain the reasons for the collection of urine, stool and sputum specimens in assessing health status and diagnosing disease.
- Perform procedures for collecting, measuring and testing urine, stool and sputum specimens appropriately.
- Describe basic anatomy and physiology of the respiratory system and the underlying principles associated with respiration.
- Demonstrate skills in administration of low-flow oxygen therapy, reservoir systems, hyperinflations therapy, and oxygen assessment.

Prereq. AHN 100

4 Credits **2 Weekly Lecture Hours**
4 Weekly Laboratory Hours

AHN 200 Excellence in Care-Nursing Assistant Program

Delaware County Community College's "Excellence in Care" Nursing Assistant Program is a 133-hour intensive course in accordance with the regulatory guidelines established by the Commonwealth of Pennsylvania. It includes, 48 hours of didactic, 25 hours of simulation laboratory activities, and 60 hours of clinical experience at an approved long term care facility. This course prepares students for employment in acute care, acute rehab, hospice, home health care and long-term care facilities. In addition to preparing students clinically, this course emphasizes leadership skills, service excellence values, problem solving/decision making, cultural sensitivity, interpersonal and civility skills in the workplace, professionalism/employability skills, conflict resolution,

and time and stress management. Students completing this course are qualified to test with the American Red Cross and placed on the Pennsylvania Nurse Aide Registry. Departmental approval is required to enroll in the course to comply with federal and state legislative requirements- OBRA and Act 14, respectively.

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

- Function as an unlicensed individual in the role of a nurse aide within the legal and ethical standards set forth by the profession nursing as regulated by the State Board of Nursing for the Commonwealth of Pennsylvania.
- Demonstrate use of appropriate and effective communication skills.
- Apply the basic principles of infection control.
- Assist with basic emergency procedures.
- Demonstrate behavior that maintains client and/or client rights.
- Demonstrate behaviors and skills that promote client and client's independence and prevents abuse
- Demonstrate knowledge and applies the principles of basic nutrition to prevent neglect and exploitation
- Identify and report abnormal signs and symptoms of common diseases and conditions of the body systems.
- Provide for a safe, clean environment.
- Provide personal care as directed by the licensed professional/practitioner/supervisor.
- Provide care to client when death is imminent.
- Demonstrate skills that incorporate principles of restorative care under the direction of a licensed professional/practitioner/supervisor.
- Demonstrate basic skills by identifying the psychosocial characteristics of the populations being served in the nursing facility and/or by the health care agency including persons affected by intellectual disabilities, mental illness, Alzheimer's disease and related disorders that cause cognitive impairment.
- Explain how to anticipate and manage crises and identifies alternative solutions when appropriate interventions fail.
- Plan problem-solving strategies using critical thinking to improve the health care delivery process.
- Employ leadership and peer mentoring skills in the clinical setting.

Prereqs. High School diploma or GED. Students must meet DCCC's clinical and physical program requirements and therefore departmental approval is required.

Prereq. INT 100

6 Credits **48 Weekly Lecture Hours**
25 Weekly Laboratory Hours

(AHS) Surgical Technology

AHS 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; anesthesia, 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.

Coreq. AHS 101 Prereq. AHM 220

5 Credits **5 Weekly Lecture Hours**

AHS 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.

Coreq. 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.

Prereq. AHS 100, AHS 101, BIO 117, AHM 104

4 Credits

4 Weekly Lecture Hours

AHS 103 Surgical Technology Practicum II

Clinical assignment in operating room of affiliating agency. Knowledge and techniques basic to effective performance as a scrubbed member of general surgery and specialty surgery will be stressed. Developing and improving skills as the scrub person and in the organization of work is emphasized. Progression to solo scrub experiences is expected, enabling the student to focus on anticipating the needs of the surgical team. Students will be expected to display manual and mental dexterity in the use of surgical instruments in a step-by-step fashion for specific surgical interventions. Assignments will also be made with the anesthesia department and in the post anesthesia care unit (PACU), during which the student will correlate the actions and uses of anesthetic agents and recovery from them and as a second assistant to the registered nurse circulator, during which the student will focus on providing a safe, efficient environment for the surgical patient and respecting the patient's inherent right to privacy, dignity, and culturally competent care.

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

- Choose and assemble the instruments, supplies and accessory items used during intermediate surgical interventions such as hernia repair; breast surgery; thyroid and parathyroid surgery; surgery of the biliary tract, liver, pancreas and spleen; gastrointestinal surgery; gynecological surgery; genitourinary surgery; thoracic surgery; vascular surgery; cardiac surgery; neurosurgery; ENT; and orthopedic surgery.
- Demonstrate ability to function as a scrubbed member of the surgical team during intermediate surgical interventions such as hernia repair; breast surgery; thyroid and parathyroid surgery; surgery of biliary tract, liver pancreas and spleen; gastrointestinal surgery; gynecological surgery; genitourinary surgery; thoracic surgery; vascular surgery; cardiac surgery; neurosurgery; ENT; and orthopedic surgery.
- Collaborate with the registered nurse circulator and anesthesia team in providing a safe, efficient patient care environment.

Coreq. AHS 102

6 Credits

12 Weekly Laboratory Hours

AHS 200 Surgical Technology III

This course is a continuation of Surgical Technology II. Knowledge and techniques basic to effective performance as a scrubbed 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 intervention, in the general and specialty fields of surgery, are reviewed.

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. Coreq: AHS 201

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 in 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.
- Demonstrate the ability to function as a member of the sterile surgical team during advanced surgical interventions such as surgery of the eye; plastic and reconstructive surgery, pediatric surgery, burn surgery; trauma surgery; and transplant surgery.

Prereq. AHS 102 and AHS 103. Coreq. AHS 200

6 Credits

24 Weekly Laboratory Hours

(ARB) Arabic

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

3 Credits

3 Weekly Lecture Hours

ARB 102 Elementary Arabic II

This course is to help students become more proficient in the four skills of Modern Standard Arabic: writing, reading, listening and speaking.

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

- Learn and write the Arabic Alphabets and marking system
- 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 to the contractor.

Prereq. TCS 100 Coreq. TCC 122

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

ARC 215 Architectural Design Concepts

This course presents fundamentals of the architectural design process and the graphic techniques, both manual sketching and CADD, for creating and presenting design ideas including a review of the types of problems and concerns that characterize design decisions. The course emphasizes the need to conceive and manipulate architecture as space.

Architectural 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.

Coreq. TCS 112, PHY 100

3 Credits

3 Weekly Lecture Hours

(ART) Art

ART 100 Art and Child 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.

3 Credits

3 Weekly Lecture Hours

ART 101 Mural Painting

This course examines contemporary mural painting through both theory and practice. Students will study the history and roots of contemporary mural painting within the context of public art. Students will execute a design for a mural each semester, providing the College with new artwork. This will be a collaborative effort. Students will also create a personal mural design project and choose and study a particular muralist. The visual language of art, including the principles and elements of design, color theory and aesthetics will be emphasized throughout the course.

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

- Distinguish basic principles of artistic design including unity/variety, balance, 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.
- Manipulate properties of hue, value and chroma.
- Identify and describe various aesthetic patterns due to historical events, geographical issues and sociopolitical patterns within the context of mural painting in both the modern and contemporary arena
- Produce a small to medium size mural design and a collaborative group mural utilizing various techniques for enlarging designs and drawings.
- Prepare the materials for the process of painting and or mural application.
- Integrate critical thinking skills through completed artworks and participation in the formal critique process.

3 Credits

3 Weekly Laboratory Hours

ART 102 Digital (SLR) Photography I

This course is an exploration into the art of SLR digital photography. Digital Photography. It will be approached from both a technical and an esthetic 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. This course is for non-photography majors and does not fulfill the requirements for the AFA in photography.

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 lens
- 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

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 eight megapixels or higher. Students are required to provide their own printing paper, CD-Rs, DVD-R's, Jump Drives, or Portable Hard Drives with fire wire capability. 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 103 Digital (SLR) Photography II

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. This course is for non-photography majors and does not fulfill the requirements for the AFA in photography.

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 2 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

Prereq. ART 102 or permission from the instructor

3 Credits

2 Weekly Lecture Hours
2 Weekly Laboratory Hours

ART 110 Art from the Ancient World through the Middle Ages

This course surveys the artistic styles from prehistoric cave art to the Proto-Renaissance. Painting, sculpture and architecture are studied as individual works in relationship to their social and religious backgrounds. Issues concerning iconography, social context, 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 Aegean, Greece, Rome, Medieval Europe and of the Proto-Renaissance Europe.
- Explain the techniques used in the painting, sculpture and architecture of the periods.
- 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 periods.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

ART 111 Art History II to Art from the Renaissance through Contemporary Times

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 their social and religious backgrounds. 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-Classical, 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 Art From Africa Asia and Beyond

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 and of the Americas will also be covered in this course. Painting, sculpture and architecture are studied as individual works in relationship to their social, geographical and religious backgrounds. Issues concerning iconography will also be a focus of this course. The influences of these cultures upon contemporary post modern 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 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 115 History of Graphic Design

This course surveys the field of graphic design and visual communications from the earliest written languages through contemporary graphic design practice. The course will help the student develop a visual vocabulary, introduce major design figures and movements, provide a historical context for design thought and practice while emphasizing the design profession as an artistic discipline.

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

- Analyze and identify the stylistic distinctions among the various historic design movements.
- Explain the techniques and tools used in the various design movements.
- Define the technical terms associated with the graphic design industry.
- Identify cultural changes that affected the visual appearance of various design movements.
- Identify important historical artist/designers that contributed to the various historic design movements.

3 Credits

3 Weekly Lecture Hours

ART 116 History of Photography

This course is a survey of the history of photography from complex events leading to its invention in 1839 to the diverse applications in our present day. The course will examine photography's influence in shaping art and culture, social and political events, and its impact on science and technology. Students will be introduced to methods of historical research and investigation through a balance of lectures, discussions and fieldwork including the viewing of contemporary and historic photographic objects. Students will be required to visit museums, galleries or other events that will add additional fees to the course.

Upon successful completion of this course, students should be able:

- Discuss the artistic qualities of photography, and the artistic movements affected by geography, politics and religion.
- Understand and discuss the crossover between other media and photography, and discuss the historical relationship between photography and other media.
- Evaluate major photographers and their work, including the style of their work and historical significance.
- Understand and discuss the ways in which photography has influenced contemporary and historic views of the world.
- Discuss the historical development of photography from its scientific and technological perspectives.
- Analyze major stylistic elements present in all photographs, including such elements as line, balance, depth of field, color and composition.

Prereq: ENG 050, REA 050

3 Credits

3 Weekly Lecture Hours

ART 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 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.
- Manipulate the general elements of visual language including line, shape, volume texture and space.
- Utilize the full grey scale including black and white.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

3 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory Hours

ART 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.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq: ART 122

3 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory Hours

ART 124 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.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq: ART 122

3 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory 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 the 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.

May be repeated with Dept approval

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

ART 131 Drawing II

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.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq: ART 130

3 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory Hours

ART 133 Photography I for A.F.A. Majors

This course introduces students to a visual language utilizing the medium of photography. Problems and assignments are structured to develop a personal vision and working knowledge of photographic materials and methods. Contemporary and historic styles in photography and composition will be introduced with an emphasis on aesthetic, technical, and conceptual practices. Demonstration, discussion and formal critiques will augment studio work.

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

- Demonstrate the fundamental skills of camera and light meter operation.
- Demonstrate the fundamental skills of darkroom procedures for film processing and printing.
- Demonstrate an understanding of the photographic image in terms of light, shape, form and organization of the two-dimensional plane.
- Make informed choices about composition when photographing and editing images.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ENG 050, MAT 040, REA 050

3 Credits

4 Weekly Laboratory Hours

ART 134 Photography II for A.F.A. Majors

This course continues the exploration into conceptual and technical proficiency with an emphasis on photography as fine art. Advanced techniques with camera work, film developing, printing and presentation will be discussed as well as the departure from traditional photographic practices, conventions and materials. Lecture, demonstration, discussion and formal critiques will augment studio work.

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

- Demonstrate camera skills that display a personal aesthetic approach to composition.
- Demonstrate technical control over darkroom procedures for film processing and printing consistent with a personal vision.
- Demonstrate experimental and manipulative techniques
- Make informed choices about composition when photographing and editing images.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 133

3 Credits

4 Weekly Laboratory Hours

ART 136 Drawing as a Design Process

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. Demonstration, discussion and formal critiques will augment studio work.

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

- Draw from observation using elementary forms and linear methods to achieve structure.
- Analyze proportion and form to build complex geometric forms.
- Create drawings using one-point, two-point, three-point and intuitive perspective techniques.
- Employ the value scale to achieve volume and mass.
- Apply rapid "visualization" processes to draw objects from memory.
- Produce finished "symbol" drawings through the process of icon translation.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 130

3 Credits

3 Weekly Lecture Hours

1 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.

Prereq. ART 130

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

ART 141 Painting II

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 means.
- 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.

Prereq. 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.

Prereq. ART 130, 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 the knowledge and understanding of the 12-hue color wheel.
- Demonstrate the ability to activate the concept of the picture plane.
- Produce cohesive composition.
- 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.

Prereq. ART 130 is recommended

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 photographs 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.

Prereq. 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 coursework 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.

Prereq. 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 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 portraiture, 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.

- Use basic four-light artificial lighting set ups in portrait and still modeling.
- Use studio light meters to calculate correct flash, fill and main lighting exposure values.
- Control basic composition and design elements including subject-background relationships, brightness ratios, contrast, line, mass, movement and form.

Prereq. ART 160 and 161 or equiv.

3 Credits

3 Weekly Lecture 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 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 contrast controls.
- Use Appropriate Storage and Transfer Media For File Compression.
- 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.

Prereqs. 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 203 History of Modern Art

This course surveys the artistic styles from early modernist ideas in the 19th century and Post-Impressionism 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-Impressionism, Art Nouveau, Expressionism, cubism, Dadaism, surrealism, constructivism, Abstract Expressionism, Pop Art, Minimalism, New 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 wherever 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 208 Computer Illustration

This course is an introduction to the computer as a drawing, illustration, and design tool. Students will gain an understanding of the creation of drawings and illustrations and their practical applications in digital media and art. Students will be given hands-on instruction on Apple Macintosh computers using a current object-oriented drawing program. Contemporary and historic styles of illustration, composition, and typography will be introduced with an emphasis on aesthetic, technical, and conceptual practices. Demonstration, discussion and formal critiques will augment studio work.

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

- Demonstrate the fundamental skills of object-based drawing and illustration through perspective, scale, weight and proportion.
- Utilize type as an expressive element.
- Print Postscript graphics on black & white and color printers.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 122 and ART 130

3 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory Hours

ART 211 Digital Imaging

This course is an introduction to the use of image editing software for the creation of dynamic images for print, web and multi-media applications. Special attention is given to scanning images, resolution formulas, appropriate file formats, color correction, organization of images, printing and prepress production, color management and image compositing. Students will be given hands-on instruction on Apple Macintosh computers using current image editing software. Contemporary and historic styles in imaging, photography and composition will be introduced with an emphasis on aesthetic, technical, and conceptual practices. Demonstration, discussion and formal critiques will augment studio work.

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

- Demonstrate the fundamental skills of image manipulation, composition and compositing techniques.
- Print raster-based graphics on black & white and color printers.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 122 and ART 130

3 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory Hours

ART 213 Page Layout

In this course, students gain an understanding of using the computer for the creation of publication design. Students complete several activities and tutorials in order to design a variety of creative documents that integrates type and graphics. Advanced features of computer-based publishing software for the production of multi-page color documents will be covered. Students will be given hands-on instruction on Apple Macintosh computers using industry standard publication software. Contemporary and historic styles in document layout, using grid construction and deconstruction, for composition will be introduced with an emphasis on aesthetic, technical and conceptual practices. Demonstration, discussion and formal critiques will augment studio work.

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

- Demonstrate fundamental skills of document design in a page layout program.
- Select, specify and copyfit text and display type using correct terminology.
- Utilize type as an expressive and integrated element with graphics.
- Apply appropriate file management techniques for prepress.
- Prepare a multiple-page document for output from a service bureau.
- Utilize style sheets, master pages and templates to organize complex documents.
- Utilize color-matching systems.
- Print Postscript graphics on black & white and color printers.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 208 and ART 211

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 215 Typography

This intermediate level course for graphic design majors concerns itself with the characteristics and design applications of type used in printed and digital matter. Students plan and produce a series of portfolio-quality projects to explore the use of type as a design element. Demonstration, discussion and formal critiques will augment studio work.

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

- Use the principles of positive/negative space, rhythm, texture and composition in manipulating letterforms as design elements.
- Select appropriate typefaces that enhance verbal messages.
- Identify and categorize commonly used type families.
- Employ letter, word and line spacing that enhance the appearance and readability of type.
- Arrange and assemble display and text in a page layout relating it to other design elements.
- Apply typographic hierarchy to organize a page layout.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 123 and ART 208

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 225 Prepress and Printing Processes

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, case study and field trips. Demonstration, discussion and formal critiques will augment studio work.

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

- Define design objectives and how work flows through the imaging process.
- Identify and define line art and halftone reproduction processes.
- Identify and define the most commonly used proofing methods and color systems.
- Identify, characterize and select 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.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 208, ART 211 and Coreq. ART 213

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 227 Web Graphics

This course introduces students to design for the World Wide Web (WWW). The focus of this course will be aesthetic design that is functional and that encourages, enhances, and simplifies the web browsing experience. Students learn to design effective interactive websites using industry standard software, Extensible Hypertext Markup Language (XHTML) editors and other web development software. Students will explore interface theory, design principles and develop visually rich web pages through hands-on experience. Demonstration, discussion and formal critiques will augment studio work.

Upon successful completion of this course a student will be able to:

- Employ the theory and principles of effective user interface design.
- Apply the basic design principles to the structure of XHTML formatted web documents with emphasis on the visual aesthetic.
- Organize effective navigation between various interface designs.
- Apply basic XHTML code to web documents using visual editing software.
- Use image-editing software to produce optimized web graphics.
- Use a professional quality visual editor to develop and maintain web sites.
- Transfer files to a server using File Transfer Protocol (FTP).
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

ART 123, ART 208 and ART 211

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 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. Demonstration, discussion and formal critiques will augment studio work.

Upon successful completion of this course, students 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 and tweening for animating using a timeline.
- Script basic commands for interactivity.
- Design a user-friendly environment with and emphasis on aesthetics.
- Create and utilize sound in a movie file.
- Deliver optimized movies to appropriate audiences.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

ART 123, ART 208 and ART 211 Coreq. ART 215

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 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. Demonstration, discussion and formal critiques will augment studio work.

Upon successful completion a student will 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.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills via the creation of artworks and participation in the formal critique process.

ART 123, ART 208 and ART 211 Coreq. ART 215

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 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. Demonstration, discussion and formal critiques will augment studio work.

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

- Write and interpret the requirements of a design brief.

- Apply basic design principles to the organization and use of type, color and composition in a multi-page publication.
- 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.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 213 and ART 230

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 232 Portfolio Seminar

This advanced-level course for graphic design majors covers the creation and selection of artwork required in job, college transfer and co-op interview situations. Demonstration, discussion, independent study and formal critiques will augment studio work.

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 artwork in a professional manner.
- Create a logical sequence for personal artwork presentation.
- Examine and select portfolio pieces appropriate for a specific interview.
- Archive two and three-dimensional work on appropriate media.
- Select a portfolio format 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 integration of studio skills from several courses.
- Make a portfolio presentation to a small group outlining project objectives, methods and materials.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 131, ART 215 and ART 230

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 233 Portfolio Preparation

This course is intended for the aspiring fine arts 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.

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 to work from direct observation incorporating the basic properties of line, value, figure-ground relationship, textures and color.
- Produce original works of art that display cohesive composition.
- Create a logical and coherent body of work incorporating a high level of craftsmanship and professionalism indicative to the discipline.
- Communicate issues of critical thinking skills through the creation of artworks and participation in formal critique process.

Prereq. ART 122, 123, 124, 130, 131, 140, 141 and 145

3 Credits

**3 Weekly Lecture Hours
1 Weekly Laboratory Hours**

ART 235 Digital (SLR) Photography III

This is an all black and white lab intensive course for students with two semesters of previous coursework in digital photography. The use of photography as an expressive tool is approached by study and application of advanced methods of working with their digital SLR camera to edit images combining Adobe Lightroom and Adobe Photoshop to produce images in black-and-white. Students will learn about the art of applying filters and curves to emulate various toning processes that were done using photo chemicals in a traditional darkroom. Students will learn to select printing papers to enhance image quality. The limits of the fine print will be explored.

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

- Previsualize subject matter for black-and-white imaging.
- Adjust exposure with an emphasis for seeing in black-and-white photography.
- Controls the tonal range in prints from digital files made under a variety of lighting conditions.
- Understand and apply the use of different types of inkjet papers in combination with various inkjet printers.
- Understand how to use editing software.
- Apply filters and curves for the toning process.
- Understand the use of printing profiles for various inkjet papers.
- Prepare a portfolio of exhibition quality, archival, matted prints which will incorporate conceptual and critical thinking.

Requirements: 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 at eight megapixels or higher. Photo inkjet printing papers, CD's, DVDs, pocket and or jump Drives. The College provides all other lab equipment, and use of a modern photo studio and digital studios.

Prereq. ART 177

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

ART 236 Digital Photography I

This course introduces students to digital photography and the computer as a darkroom tool. Students will gain an understanding of how digital cameras work, image capturing, manipulation and the fine art of making a digital print. Contemporary and historic styles in photography and composition will be introduced with an emphasis on aesthetic, technical, and conceptual practices. Demonstration, discussion and formal critiques will augment studio work. Camera and additional expenses for photographic supplies are required.

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

- Understand technical and aesthetic differences between analog and digital photography.
- Demonstrate the fundamental skills of camera and light meter operation.
- Demonstrate proper camera and digital processing techniques in production of a work of art.
- Demonstrate an understanding of the photographic image in terms of light, shape, form and organization of the two-dimensional plane.
- Make informed choices about composition when photographing and editing images.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 123

3 Credits

4 Weekly Laboratory Hours

ART 237 Alternative Processes

Prereq. ART 123, ART 134

3 Credits

4 Weekly Laboratory Hours

ART 238 Medium Format Photography

This course introduces the student to Medium Format Photography. Students will learn to make and process Medium Format black and white photographs. The course will cover various types of cameras that use medium format including Twin Lens cameras as well studio lighting. The formal and aesthetic concerns of creating images in medium format will be emphasized throughout the class. Lecture, demonstration, discussion and formal critiques will augment studio work.

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

- Demonstrate an understanding of the medium format camera and its various components.
- Demonstrate technical control over darkroom procedures for Medium Format film processing and printing consistent with a personal vision.
- Demonstrate the proper application and control over key and fill lighting.
- Make informed choices about composition when photographing and editing images.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 123, ART 134

3 Credits

4 Weekly Laboratory Hours

ART 239 Digital Photography II

In this course students will explore digital photography in relation to fine art. Students will be given assigned lectures, writings and will produce artwork using a digital camera. Discussions and lectures will focus on the physical, conceptual, and theoretical characteristics of the digital media as it pertains to art and art making. Emphasis will be placed on the students' development of an understanding of the evolution of and the theory associated with art, photography and digital imaging.

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

- Demonstrate proper camera and digital processing techniques in production of a work of art.
- Understand technical and aesthetic differences between traditional and digital photography.
- Develop an understanding and knowledge of design concepts for Digital Media.
- Make informed choices about composition when photographing and editing images.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 211, ART 236

3 Credits

4 Weekly Laboratory Hours

ART 240 Large Format Photography

This course introduces the students to large format photography. Students will learn to make and process and large format black and white photographs. The course will cover camera movements, the Scheimpflug principle and other techniques unique to large format cameras as well studio lighting. The formal and aesthetic concerns of creating images in large format will be emphasized throughout the class. Lecture, demonstrations, discussion and formal critiques will augment studio work.

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

- Demonstrate an understanding of the large format camera and its various components.
- Demonstrate technical control over darkroom procedures for Large Format film processing and printing consistent with a personal vision.
- Demonstrate how to correct distortions associated with the optical aberrations using large format equipment.
- Demonstrate the proper application and control over studio lighting.
- Make informed choices about composition when photographing and editing images.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication.
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. ART 123, ART 134

3 Credits

4 Weekly Lecture Hours

ART 241 Portfolio Presentation

This course is a capstone experience for students completing the photography program. Students will produce a professional portfolio and self-promotional materials. Topics include researching transfer schools, refining a body of work, selecting works for the portfolio, strategies for different portfolio delivery and presentation methods, writing artist statements, cover letters, resumes, and interviewing skills. Lecture, demonstration, discussion and formal critiques will augment studio work.

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

- Demonstrate technical ability and aesthetic judgment by producing an individually selected portfolio project.
- Make critical aesthetic judgments regarding photographic composition, visual literacy, and the creative process in order to produce photographic images
- Demonstrate professional writing and interviewing skills for the purpose employment and transfer to another institution of higher education.
- Solve projects in a unique and creative manner.
- Produce content as an effective form of visual communication
- Communicate issues of critical thinking skills through the creation of artworks and participation in the formal critique process.

Prereq. 27 Cr in ART

3 Credits

4 Weekly Laboratory Hours

(ASL) Sign Language

ASL 100 American Sign Language

This course will introduce students to American Sign Language. As language is a reflection of culture and geography, students will also become familiar with the history of the American Deaf community and the evolution of ASL. In addition, this class will provide up-to-date information and experience with the impact of technology on the culture and language.

An American Sign Language curriculum will be utilized to give students an advanced-beginner level of competency by the end of the course. As ASL is a visual-spatial language, students will learn about the differences between this modality vs. spoken and written languages. Interactive practice will be integrated both in-class and via books and DVD materials for home use.

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

- Demonstrate knowledge of fingerspelling and American Sign Language vocabulary, grammar and characteristics as presented in the curriculum.
- Demonstrate knowledge of how technology has impacted the Deaf community and ASL

- Demonstrate understanding of American Deaf culture-specifically as it relates to language use and social interactions
- Demonstrate understanding greetings, sharing identifying information and use of appropriate ASL etiquette

3 Credits

3 Weekly Lecture Hours

ASL 102 American Sign Language II

This course will continue where students left off in their American Sign Language Level I course. Picking up where Level I ended, students will increase their vocabulary, grammar, knowledge and usage of ASL. Students will deepen their understanding of the culture of the American Deaf community. An American Sign Language curriculum will be utilized to give students an advanced beginner level of competency by the end of the course. As ASL is a visual-spatial language, students will continue to learn about the differences between this modality vs. spoken and written languages. Interactive practice will be integrated both in-class and via books and DVD materials for home use. Assignments will include memorization and practical use of the language, attendance at events relating to Deafness and ASL and a response paper to the cultural and linguistic aspects of ASL and Deaf culture. Written and performance quizzes and exams will be required as well.

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

- Demonstrate knowledge of fingerspelling and American Sign Language vocabulary, grammar and characteristics as presented in the curriculum.
- Demonstrate knowledge of how technology has impacted the Deaf community and ASL.
- Demonstrate understanding of American Deaf culture-specifically as it relates to language use and social interactions.
- Demonstrate understanding of how to engage in personal interactions with Deaf individuals including greetings, sharing identifying information and use of appropriate ASL etiquette.

Prereq. ASL 100

3 Credits

3 Weekly Lecture Hours

(AUT) Auto Mechanics

AUT 100 Introduction to Automotive Service Operation and Shop Practices

This introductory course is designed to provide the student with knowledge and skill in automotive service operations and shop practices. The student will interact with various automotive service organizations, dealerships, and independent service and repair contractors. Proper handling, parts departments, job classifications, training for a career in the automotive service and repair industry, and other automotive business related topics will be addressed. This course presents instruction in automotive terminology, use of service manuals, diagnostic equipment, use of shop tools, hand tools, and power tools in relation to shop practices and safety. Accident prevention practices, first aid tools and equipment, and personal environmental safety practices and procedures will be stressed throughout the course. In addition, an overview of the automotive engines system, its major components, delivery units, preventive maintenance, and basic mathematics will be covered.

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

- Demonstrate personal and environmental safety practices.
- Apply basic first aid procedures. Identify tool and equipment nomenclature.
- Apply and utilize tool safety regulations.
- Explain Occupational Safety and Health Act (OSHA).
- Utilize service manuals/electronic media.
- Identify all data informational systems.
- Perform basic mathematical calculations.
- Identify the major components of the automobile.
- Perform calculations using the metric system.

2 Credits

1 Weekly Lecture Hour

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 components and 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 Strut 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 Strut Systems.
- Inspect and service front suspension components.
- Repair rear, independent, semi-independent, and live-axle rear suspension systems.
- Perform two- and four-wheel alignment procedures.
- Utilize alignment machines.

Prereq. AUT 100

4 Credits

**2 Weekly Lecture Hours
4 Weekly Laboratory Hours**

AUT 115 Fuel I and II

This course introduces the student to gasoline and diesel fuels with emphasis on fuel performance, delivery systems, 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 diesel 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 defects.
- 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.

Prereq. AUT 100

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

AUT 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.

Prereq. AUT 101 and AUT 102

3 Credits

**1 Weekly Lecture Hour
4 Weekly Laboratory Hours**

AUT 123 Power Train Controls

This course is designed to expose the student to the design, service, and diagnosis 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.

Prereq. AUT 100

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

AUT 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.
- Operate manual and automatic systems.

Prereq. AUT 100

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

AUT 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 sparks ignition systems.
- Diagnose primary and secondary distributor service ignition control systems.
- Diagnose and repair no start problems.
- Adjust ignition timing on engines.

Prereq. AUT 101

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

AUT 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 drivability 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, and 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 Hour
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/transaxles 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 cautions and safety.
- Evaluate torque converters, bearings, bushings, and thrust washers.
- Disassemble, measure, and assemble units.
- Measure and install new parts as required.
- Differentiate between 4-wheel drive and all-wheel drive.
- Evaluate transfer cases, their operation, service, and maintenance.
- Service 4-wheel drive and all-wheel drive vehicles.
- Identify hydraulic systems.
- Lock and unlock hubs.
- Change transmission fluids and determine their proper usage in various manufacturers' units.
- Apply proper procedures for oil and filter change.
- Remove, overhaul and re-install transmission/transaxle in vehicles.
- Adjust units back to manufacturer's specifications.

Prereq. AUT 100

4 Credits

**2 Weekly Lecture Hours
4 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 151

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

(BIO) Biology

BIO 100 Biological Science

This course explores the following aspects of biology: the organization of life, the development of living organisms, the transmission of traits, evolution, behavior and ecology. This course is intended for the non-science major. It should not be taken in conjunction with BIO 110 or BIO 111.

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

- Analyze the characteristics of life as currently understood on terra firma.
- Relate the life characteristics to the simplest level of existence: the single cell.
- Describe various patterns of reproduction among plants and animals.
- Evaluate various techniques of population control.
- Explain the mechanism by which traits are transmitted from parent to offspring.
- Summarize the causes and effects of various types of mutations.
- Trace the history of the modern concept of evolution.
- Survey the system of classification of plants and animals.
- Interpret behavior as an illustration of the modern concept of evolution.
- Relate the sources and the effects of pollutants to the quality of the environment.
- Demonstrate an understanding of laboratory experiments as they relate to the biological concepts presented in the above competencies.
- Formulate applications of biological concepts to one's lifestyle and/or interests through integration activities.

Prereq. REA 050

4 Credits

**3 Weekly Lecture Hours
2 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.

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
- Describe the processes and mechanisms that may affect biodiversity at local, regional, and global scales

- 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

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

- Demonstrate an understanding of cardiac anatomy and physiology
- 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
- Examine the role of the urinary system in maintaining homeostasis
- Assess the body's ability to maintain fluid, electrolyte, and acid-base homeostasis
- Relate the structure of the male reproductive system to its function
- Relate the structure of the female reproductive system to its function
- 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. BIO 150

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

BIO 200 General Zoology

A hands on survey of the animal kingdom, with emphasis on evolutionary relationships, form and function, and interactions of animals with their environments.

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

- Integrate evolutionary theory into the study of the phylogeny of animals
- Distinguish, by comparative biology, the major groups of animals
- List and describe the distinguishing characteristics of the Kingdom Animalia, including a comparison of the phyla Porifera, Cnidaria, Platyhelminthes, Nematoda, Mollusca, Annelida, Arthropoda, Echinodermata, and Chordata
- Describe the characteristics, comparative biology, and evolutionary relationships of extant vertebrate classes
- Describe the physiology of organisms in each of the major phyletic groups
- Demonstrate the skills required of microscopic examination of animal tissues/specimens and gross animal dissection
- Access, interpret, and evaluate peer-reviewed, primary literature in the zoological sciences

BIO 111 is recommended but not required

Prereq. BIO 110 or BIO 111

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

BIO 210 General Botany

A survey of the major plant groups with an emphasis on basic structure, function, reproductive patterns, biological contributions, development and evolutionary relationships within each group.

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

- Describe basic comparative plant anatomy, morphology, and physiology
- Describe and recognize the distinguishing characteristics of diverse groups within the Plant Kingdom including bryophytes, ferns and fern allies, gymnosperms, and angiosperms
- Discuss the major evolutionary advances in plant form and function
- Describe life cycles of representative algae, bryophytes, ferns and fern allies, gymnosperms and angiosperms and relate to major evolutionary advances in plants and related organisms

- Explain the importance of botany as a past, present, and future science
- Describe concepts and theory pertaining to modern plant ecology
- Demonstrate laboratory and field skills required of examination and identification of plant tissues and specimens
- Access, interpret and evaluate peer-reviewed, primary scientific literature

BIO 111 is recommended but not required.

Prereq. BIO 110 or BIO 111

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

BIO 220 Nutrition and Well Being

This course explores the principles of nutrition and their application to the establishment and maintenance of a person's well-being throughout his/her life. The course includes such concepts as dietary requirements, nutrient composition, food resources, metabolic processes, food additives, nutritional analysis and global considerations.

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

- Analyze the nutrient requirements for a healthy, balanced nutrition style.
- Perform and interpret a computerized nutritional analysis.
- Relate basic nutrients to various established dietary guidelines.
- Interpret the effects of nutrient deficiencies and megadoses.
- Relate nutrient resources to world hunger.
- Evaluate the effect of the metabolic pathway on nutrient composition.

Prereq. BIO 100 or BIO 110 or BIO 150

3 Credits

3 Weekly Lecture Hours

BIO 230 Microbiology

Microbiology is designed to examine the biology of microorganisms and their significance to human existence. Cellular structures, metabolic pathways and life strategies will be studied. The role of microorganisms in disease, genetic engineering, and the environment will be covered. This course is designed for students in the Science for the Health Professions and Natural Science curricula.

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

- Examine the evolutionary relationships between microorganisms and macroorganisms.
- Describe the cellular biology of single-celled organisms.
- Analyze the impact of microorganisms on humans.
- Analyze the life strategies of various bacterial cells.
- Apply the standard techniques for the study of microorganisms in the laboratory.
- Apply standard laboratory skills to identify unknown bacteria.
- Describe the properties of the genetic material in bacteria and viruses.
- Explain the role of microorganisms in genetic engineering.
- Examine the role of microorganisms in disease.
- Describe the various strategies used for control of infectious disease.

Prereq. BIO 110 and CHE 110 or BIO 150 and BIO 151

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

(BUS) Business

BUS 100 Introduction to 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. Among the topics studied are the Business in a global environment, the various forms of business, the social responsibility of business and the functions of accounting, marketing, management, and human resource management. The role of technology in business is also explored.

Upon successful completion of this course the student should be able to:

- Explore the various careers in business.
- Explain current events and economic conditions and how they influence business.
- Compare and contrast the various forms of business.
- Discuss the strategic role of marketing.
- Explain the importance of ethical behavior, social responsibility and diversity in Business.
- Investigate the uses of technology in business.
- Explain the function of accounting and finance in the business decision-making process.
- Discuss the functions of management.
- Discuss the role of human resource management.
- Define globalization and identify its impact on the business environment.

Prereq. ENG 050, REA 050 and MAT 040

3 Credits

3 Weekly Lecture Hours

BUS 101 Introduction to International Business

This course details practical terminology, concepts, associations, relationships and issues 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.
- Assess the physical and political forces that shape the foreign environment.
- Identify the necessary economic analyses that should be completed before trading or investing in another country.
- Discuss the various export practices and procedures.
- Examine East-West trade and its effect on economic relations.

Prereq. ENG 050, MAT 040 and REA 050 or pass test

3 Credits

3 Weekly Lecture Hours

BUS 102 Introduction to E-Commerce

This introductory e-commerce course is designed to provide students with a basic understanding of what e-commerce is, how the Internet is changing the way business is conducted globally and how corporations are using the Internet to improve effectiveness of an organization's goals. The course defines e-commerce and related terminology, examines the relationship between consumers and business services on-line and looks at how business is conducted on the Web. Additional topics include what is involved in developing a Web site and an exploration of customer relationship management. The ethical, political and legal issues concerning proper conduct on the Internet are also discussed. The course is designed for students interested in electronic commerce and/or using computer technology in a business environment. It is a hands-on course using selected individual and team exercises on the Internet and other business computer technologies.

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.
- Identify different phases of doing business on the Web.

- Explain the use of e-commerce in a business-to-business (B2B) setting.
- Give examples of how corporations are using the Internet to increase revenues and improve internal and external communications.
- Demonstrate how e-commerce can improve the effectiveness of organizational goals.

Prereq. ENG 050, REA 050, MAT 040 and DPR 100

3 Credits

3 Weekly Lecture Hours

BUS 105 Introduction to Entrepreneurship

This class is an introduction entrepreneurial class for students interested in starting their own business. The ultimate goal of the class is to improve management, leadership, accounting and overall business skills and knowledge base for our entrepreneur students.

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

- Read and understand entrepreneurial terminology.
- Take, analyze, and assess personal self-assessment indicators measuring personal qualities best suited to being an entrepreneur.
- Define ethics and understand why ethics are important in small business. Describe the different structures of business ownership.
- Understand small business marketing, product and pricing strategies.
- Understand and develop the use of SWOT analysis to identify strategic options. Review basic accounting practices that apply to entrepreneurship.
- Understand the basic legal business environment that relates to small business. Learn how to conduct a feasibility study for an entrepreneurial business. Understand what it takes to be a successful entrepreneur.

Prereqs. Satisfactory score on the English and Reading placement test or successful completion of Developmental English (ENG 050) 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.

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 world 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 050 and REA 050

3 Credits

3 Weekly Lecture Hours

BUS 111 International Management

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.

Prereq. BUS 100 Coreq. ENG 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 letters, memos and reports, 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, customer 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 DPR 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 050 and REA 050 or pass test

3 Credits

3 Weekly Lecture Hours

BUS 210 Principles of Management

This course is designed to present the functions and responsibilities of middle-management positions.

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

- Review the historical development of management theories and relate them to current management thought.
- Use the planning process to accomplish both personal and organizational goals.
- Explain the importance of and the procedure for organizing the workplace and defining tasks, responsibilities and relationships.
- Describe the staffing process of recruitment, placement, training and development of organization members.
- Identify the leadership and motivational traits and qualities necessary to accomplish organizational goals.
- Discuss the tools and techniques used in the control process.
- Analyze the decision-making and problem-solving methods that managers use.
- Assess how the social, technological, economic and political/legal forces affect managers.

Prereq. BUS 100

3 Credits

3 Weekly Lecture Hours

BUS 211 Supervision

The major thrust of the course is the supervisor's relationship to employees at the first-level of management in day-to-day operations. It is an introductory approach to the understanding of basic skills and activities and skills required to supervise these workers effectively.

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

- Identify the supervisor's role in the work organization.
- Apply the principles involved in planning, delegating, motivating, leading and communicating.
- Use techniques necessary for successful supervision, including those involved in staffing, training, compensating, evaluating and discipline.
- Relate problem-solving and decision-making to the challenges of the first-line supervisor.
- Be cognizant of time management and conflict management skills.
- Deal effectively with special problems such as stress, alcohol, drugs and employee theft.
- Review the laws and regulations applicable at the supervisory level, including those pertaining to labor relations, equal employment, safety and protected employees.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

BUS 212 Introduction to Sport Management

This course explores the sport industry environment and introduces classic business and management concepts as they apply to this specific setting. Students are exposed to 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.
- Verbalize 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 sporting environment.
- Describe the application of management control tactics to promote quality, productivity and integrity within a sports organization.

Prereq. ENG 050 and REA 050

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 introduce 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.
- 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.

Prereq. ENG 050 and REA 050, pass test

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. ENG 050, REA 050, MAT 040, DPR 100

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. ENG 050, REA 050 and MAT 040

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 217 Compensation & Benefits

This course is an introduction to compensation and benefits issues in today's organizations. It is a practical approach to the systems, methods and procedures to establishing and managing an organizational compensation program. The course provides students with the concepts, principles and theories used in the design and implementation of compensation systems in all types of organizations. Compensation and benefits systems will be discussed as a means to effective recruitment, motivation and retention.

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

- Explain the different compensation philosophies used in organizations.
- Describe the behavioral considerations affecting compensation and benefits.
- Discuss the legal issues involved in compensation and benefits administration.
- Outline the process used in building a compensation system.
- Explain the job evaluation process and discuss the methods used in performing a job evaluation.
- Discuss methods of conducting and analyzing market pay surveys.
- Discuss the various ways of establishing a pay-for-performance system.
- Explain the importance of health-care, security, and retirement benefits.
- Discuss benefits communications and flexible benefits considerations in benefits administration.

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

Introduction to the use of probability and statistical inference for business decision making. Various distributions and techniques are presented to prepare the student for parameter estimation and testing.

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

- Discuss the principles of descriptive and inferential statistics.
- Compute probabilities using discrete distributions, continuous distributions and counting theory.
- Investigate concepts in sampling distributions and the Central Limit Theorem.
- Calculate parameters using the uniform, binomial and normal distributions.
- Develop and interpret simple and multiple regression equations and their correlations coefficients.
- Construct interval estimates for population means.
- Conduct hypothesis testing for one or two samples.
- Conduct simple variance testing using ANOVA F distribution principles.
- Calculate simple index numbers.
- Execute elementary goodness of fit testing using the chi-squared distribution.
- Utilize Excel functions to perform complicated calculations (such as STDEV or PERMUT)
- Utilize Excel to create charts, such as scatter diagrams with linear trendlines and equations."

Prereq. MAT 100, MAT 120 or higher

3 Credits

3 Weekly Lecture Hours

BUS 221 Elementary Statistics Laboratory

An elementary statistics lab to supplement BUS 220, providing students with the basics of descriptive and inferential statistical analysis as well as utilizing the statistical capabilities of Excel. This course is intended for students whose transfer institution requires four credit hours of Statistic I, that is BUS 220 (3 credit hours) and BUS 221 (1 credit hour)

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

- Demonstrate a comprehensive command of the statistical capabilities of Microsoft Excel
- Produce statistical graphics, including scatter diagrams, and cumulative frequency polygons in Excel
- Calculate parameters using the uniform, binomial and normal distributions
- Develop and interpret simple and multiple regression equations and their correlations coefficients.
- Construct interval estimates for population means
- Conduct hypothesis testing for one or two samples
- Conduct simple variance testing using ANOVA F distribution principles
- Calculate simple index numbers
- Execute elementary goodness of fit testing using the chi-squared distribution

Prereq. BUS 220

1 Credit

1 Weekly Lecture Hour

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.

Prereq. ENG 050 and REA 050

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.
- Determine the channels of distribution as well as the number and kinds of channel intermediaries needed to get goods from the producer to the consumer.
- Establish the value to be given in exchange for goods or services.
- Utilize the tools of communication to develop and effectively share information between buyer and seller.
- 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 used 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 chance for 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 236 Principles of Sports Marketing

This course is designed to expose the student to fundamental concepts of marketing, emphasizing how those 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 market 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. Develop an understanding of market research in a volatile industry.
- Establish the basics of customer satisfaction from an economic value perspective. Demonstrate comprehension of the role of the marketing manager in a sporting environment.
- Describe Sponsorship as a Sports Product.

Prereq. BUS 212

3 Credits

3 Weekly Lecture Hours

BUS 243 Legal Environment of Business

This course examines the contemporary legal environment as it relates to business. Among the topics covered are the origins of law and the legal system; ethics and social responsibility of business; contracts and non-contractual injury; agency relationships; governmental regulations of trusts, securities, employment and the environment; the Uniform Commercial Code; and international law affecting business.

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

- Describe how our law is derived from common and statutory law, constitutional interpretation and administrative regulations.
- Identify the federal and state court systems, jurisdiction and functions.
- Discuss the ethical and social responsibility of business.
- Discuss contracts including the formulation, dissolution and remedies for breach.
- Examine non-contractual injury, including negligence, strict liability, intentional torts and business-related torts.
- Describe the agency relationship and other business organizations, such as partnerships and corporations.
- Discuss the government regulations of business as they pertain to anti-trust, securities, employment and the environment.
- Examine the Uniform Commercial Code with special emphasis on sales, personal property, commercial paper and secured transactions.
- Identify current legislation and trends in international law.

Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

BUS 246 Teamwork

This course addresses the use of teamwork in a business environment both to identify and to solve problems. The course will emphasize examples, role playing and exercises for group participation.

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

- Analyze group dynamics and group process, and suggest interventions to improve them.
- Explain how problem solving differs in a group setting.
- Practice the interpersonal skills needed for effective teamwork.
- Demonstrate conflict-management skills.
- Perform the roles of leader, facilitator and participant on teams.
- Identify the key aspects of effective meetings.
- Demonstrate effective meeting skills.
- List and compare the stages of team development.

- Contrast the different roles played by members of teams and meeting participants.
- Describe personal impact in teams and personal reactions to team interactions.
- Discuss the management of diversity on teams.
- Describe various applications of teamwork within unit-based, cross-functional, customer and vendor organizations.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

(CHE) Chemistry

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 designed for students who do not intend to major in science.

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

- Demonstrate knowledge of 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. REA 050, ENG 050, MAT 060

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

CHE 101 Introduction to General Chemistry

CHE 101 is a one semester course covering the fundamentals of general chemistry. It is designed to fulfill the requirements of certain allied health and nursing programs. It also is appropriate as a basic chemistry course or as a science elective for students who are not science, engineering, or mathematics majors. Although not a prerequisite, this course may also serve as preparatory course for CHE 110 - General Chemistry I. Topics include: atomic theory, chemical bonding, structure, reactivity, stoichiometry, basic chemical equilibrium, gas laws, solutions, acids and bases, and nuclear chemistry.

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

- Define chemistry as the study of matter. Describe its transformations and the energy associated with these transformations.
- Apply the concepts of atomic theory and atomic structure to describe elements and how they combine to form compounds.
- Predict and identify the products and reactants of a chemical reaction, and quantify the amounts of materials consumed and produced using basic stoichiometry.
- Apply the concepts of the kinetic molecular theory and the ideal gas law to predict the behavior of gases.
- Describe the basics of solution chemistry. Perform calculations including concentration, dilution and simple acid base chemistry.
- Use nuclear chemistry to describe radioactive decay.
- Apply safe laboratory skills to solve problems in a cooperative environment.

Prereq. REA 050, ENG 050, MAT 060 or test score

4 Credits

**3 Weekly Lecture Hours
3 Weekly Laboratory Hours**

CHE 102 Introduction to Organic and Biological Chemistry

CHE 102 is a one semester course covering the fundamentals of organic and biological chemistry. It is designed to fulfill the requirements of certain allied health and nursing programs. It also is appropriate as a science elective for students who are not science, engineering, or mathematics majors. Although not a prerequisite, this course may also serve as a preparatory course for CHE 200 - Organic Chemistry I. This course is dedicated to understanding the structure, properties and chemistry of a variety of organic and biological molecules. Topics include: saturated and unsaturated hydrocarbons, organic molecules containing oxygen and sulfur, carbohydrates, carbonyl compounds, lipids, proteins, and nucleic acids.

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

- Recognize and name compounds belonging to different classes of organic molecules.
- Draw Fischer projections of organic molecules and identify any chiral carbons.
- Predict the products of the reactions of organic molecules.
- Identify carbohydrates, proteins, nucleic acids and lipids and discuss their biological importance.
- Recall the structures of amino acids and identify the structural levels of proteins.
- Describe the function of an enzyme, discuss factors that affect enzyme activity, and explain how inhibitors work.
- Recall the structures of nucleotides and relate them to the structure of DNA and RNA.
- Describe protein synthesis from DNA.
- Apply safe laboratory skills to solve problems in a cooperative environment.

Prereq. CHE 101

4 Credits

**3 Weekly Lecture Hours
3 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 110 General Chemistry I

This course is the first part of a rigorous, mathematics based college chemistry sequence. This course is designed for students majoring in science or engineering fields. Basic laws and theories of chemistry including: chemical bonding, chemical reactions, stoichiometry, gas laws, solution chemistry, thermochemistry, chemical periodicity and atomic will be covered.

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

- Define chemistry as the study of matter, its properties and changes and the energy associated with these changes.
- Use the metric system as a tool for performing and applying scientific measurements.
- Identify and classify substances with regard to composition, state, purity and modes of separation.
- Apply the knowledge of the periodicity of the elements toward the description of chemical bonding.
- Solve mathematical problems related to chemical reactions and the mole concept including solution calculations.
- Describe and calculate heat in chemical reactions and physical processes.
- Explain the relationship between the Periodic Table and Atomic Structure.
- Describe chemical bonding using Lewis structures, VSEPR theory and the valence bond theory.

CHE 101 or High School Chemistry Course is recommended.

Prereq. REA 050, ENG 050, MAT 100

4 Credits

**3 Weekly Lecture Hours
3 Weekly Laboratory Hours**

CHE 111 General Chemistry II

This course is the second part of a rigorous, mathematics based college chemistry sequence. This course is designed for students majoring in science or engineering fields. Basic laws and theories of chemistry including: colligative properties, kinetics, chemical equilibrium, acid-based equilibria, solubility and complex ion equilibria, thermodynamics, oxidation-reduction reactions, electrochemistry and nuclear chemistry will be covered.

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

- Describe the major types of intermolecular forces and the role they play in the properties of solids and liquids.
- Describe the properties and behavior of solutions. Perform calculations involving solution concentrations and colligative properties.
- Apply the principles of kinetics to chemical systems.
- Apply the principles of chemical equilibrium to chemical systems.
- Evaluate and apply modern theories of acids and bases, especially the concept of pH.
- Apply the concepts of solubility and complex ion formation.
- Discuss and apply the fundamentals laws of thermodynamics, free energy and entropy.
- Discuss and apply the principles of electrochemistry to chemical systems.
- Describe the basic concepts of nuclear chemistry.
- Demonstrate an ability to utilize modern chemistry laboratory techniques and equipment.

Prereq. CHE 110 with a grade C" or better and MAT 151

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

**4 Weekly Lecture Hours
3 Weekly Laboratory Hours**

(CHI) Chinese

CHI 101 Elementary Chinese

This course introduces students to the fundamentals of Chinese Language by focusing on the development of functional competence in the four skills (listening, speaking, reading and writing), as well as Chinese cultural knowledge. Students completing this course will master Chinese pronunciation system (Hanyu Pinyin), basic Chinese Characters writing skill, basic Chinese grammar. The emphasis is placed on actual verbal communication.

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

- Read and pronounce syllables (pinyin) of standard Chinese
- Exchange basic greetings; Introduce oneself; Inquire about a person's name and nationality
- Inquire about one's occupation, family
- Read and write about 75+ characters

3 Credits

3 Weekly Lecture Hours

CHI 102 Elementary Chinese II

This course is a continuation of the study of Chinese Language fundamentals. More advanced grammatical rules are taught in class and reinforced through the use of audios. Emphasis is placed upon verbal/oral communication, as well as awareness of the expansion of Chinese culture.

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

- Tell about time and dates; inquire about one's age and birthday; invite a person to a meal
- Talk about basic personal hobbies; set up plans for the weekend
- Conduct simple conversations on the topic of visiting someone else's house
- Read and write about 200 plus Chinese characters

Prereq. CHI 101 or placement of instructor

3 Credits

3 Weekly Lecture Hours

(COMM) Communication Studies

COMM 100 Introduction to Interpersonal Communication

This course focuses both on the theory and the practice of interpersonal communication within specific relationships and contexts. The course considers communication as process of symbolic interaction through which we construct our social realities.

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

- Distinguish between interpersonal communication and other types of human communication
- Demonstrate an understanding of the various contexts and particular social factors that are active in interpersonal communication.
- Demonstrate an understanding of the communicational basis of culture.
- Demonstrate an understanding of verbal and nonverbal components of human communication.
- Demonstrate an understanding of the unspoken rules, understandings, and processes which guide human interactions.
- Explain the role of technology in interpersonal communication.
- Understand the role of interpersonal communication in developing, negotiating, maintaining, and terminating relationships.
- Identify listening styles and barriers to active listening.
- Identify the consequences of selecting or engaging in different conflict management behaviors.

Prereq. ENG 050 and REA 050 or pass test

3 Credits

3 Weekly Lecture Hours

COMM 102 Communication Across Cultures

This course focuses on communication among and between people of different cultures. It is designed to introduce students to the basic concepts, theories, and research pertaining to intercultural communication. Students can also expect to engage in in-class exercises, activities, and discussions regarding everyday encounters with people from different socio-economic (class) backgrounds, racial, ethnicities, sexual orientations, gender, physical abilities and religious belief systems.

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

- Explain the interconnectedness of communication and culture
- Demonstrate a self-awareness and an understanding of others' cultural values, beliefs, and communication styles
- Describe the influence of culture on one's identity formation and identity management
- Explain the role of language in perception and culture
- Describe the characteristics of intercultural conflict and culturally-based conflict styles
- Explain the cultural value orientation patterns held by different cultures
- Analyze the way the history (e.g., political, intellectual, social, family, national, and cultural-group) informs an intercultural communication encounter
- Describe cultural shock and the various academic approaches to understanding it

Prereq. COMM 100

3 Credits

3 Weekly Lecture Hours

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 100

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 deliver a variety of presentations. Students are introduced to various methods of delivery, organizational patterns, and types of presentational aids. Emphasis is placed on preparing presentations for multiple audiences and occasions.

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

- Recognize appropriate techniques for managing communication apprehension.
- Construct and deliver a variety of presentations.
- Construct and use appropriately designed visual aids.
- Locate and effectively incorporate supporting material drawn from a variety of sources.
- Organize content in a logical manner according to presentation type.
- Deliver a presentation employing effective stylistic techniques.
- Demonstrate effective listening skills as both a speaker and a listener of presentations.
- Demonstrate ethical responsibilities of a speaker.

Prereq. ENG 050 and REA 050 or pass test

3 Credits

3 Weekly Lecture Hours

COMM 115 Introduction to Public Relations

This course treats public relations as communication-the process of organizations relating to their various "publics." Students explore the theory, principles and techniques of contemporary public relations as practiced in business, government, nonprofit and civic groups, cultural organizations, education and the community. Students prepare press releases, public service announcements, speeches, slide programs or other appropriate communication vehicles. For students in all curricula and programs.

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

- Describe public relations as a communication function of organizations.
- List 10 basic principles of effective public relations.
- Identify and describe career opportunities/possibilities within the student's field of study, interests or aptitude area in public relations.
- Cite examples from the American past of public relations campaigns or principles that changed a "public's view of an organization, a movement, an institution or a tradition.
- Anticipate and analyze critical and negative views of public relations.

- Identify the use of communicative art forms such as music, poetry, art, dance, film or story telling, in any public relations campaign mounted by a significant American organization.
- Use, where appropriate, contemporary technology such as desktop publishing or computer software or slide and sound show or photography or student-produced video in designing a public relations campaign on a contemporary American problem, organization or movement.

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

3 Credits

3 Weekly Lecture Hours

(CPT) Carpentry

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:

- Cite safety precautions for carpentry work.
- Demonstrate hand and power tools associated with carpentry and their practical applications.
- Select materials and supplies.
- Utilize measurement tools correctly and accurately.
- Building rough frame structures.
- Read blueprints relevant to basic carpentry.

Prereq. Department approval

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.

Dept. approval

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.

Dept. approval

2 Credits

**1 Weekly Lecture Hour
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.

Prereq. CUL 150

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory 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 joist.
- 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 Hour
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, freeform 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 Hour
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, sanders will be utilized.

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

Describe and identify various parts of 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, materials, and installing glass.
- Discuss the identification and applications of interior and exterior door and window casings.
- Construct and set door frames.
- Identify and install door and window hardware.

3 Credits

3 Weekly Lecture Hours

CPT 160 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 low maintenance exterior building products to residential structures. Roofing and siding types, materials, measurements, exterior insulation, trim and soffits, and identification of flash valleys, sidewalls, chimneys, as well as roof obstructions will be discussed. The proper use of powered and non-powered hand tools will be covered thoroughly. Materials including roofing felt, organic and fiberglass asphalt shingles, aluminum and vinyl siding will be introduced.

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, sidewalls, chimneys, and other roof obstructions.
- Cut and bend roll aluminum to fit exterior trim and soffits.
- Apply and cut fanfold exterior insulation.
- Estimate needed roofing and siding materials.

4 Credits

**2 Weekly Lecture Hours
4 Weekly Laboratory Hours**

CPT 161 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, stairway and balcony types, layouts, construction and terminology. Design concepts, platforms and landings, 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 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

4 Credits

**2 Weekly Lecture Hours
4 Weekly Laboratory Hours**

CPT 162 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 trim will be presented. The process of measuring proper applications of moldings, and molding patterns will be covered.

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 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.
- 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, rafters, 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 present 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
- Determine the uses and applications of brick, stone and stucco siding.
- Estimate required amounts of roofing and siding.

Prereq. CPT 160

4 Credits

**2 Weekly Lecture Hours
4 Weekly Laboratory Hours**

(CUL) Culinary Arts

CUL 115 Professional Cooking I

Students will be introduced to the use and care of professional foodservice equipment, basic knife skills, basic cooking methods, weighing and measuring, culinary terminology and applying kitchen sanitation and safety. Students will practice hands-on development of these skills in a professional kitchen.

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

- Practice and demonstrate the safe and proper use and care of commercial foodservice equipment
- Practice and demonstrate safe kitchen work habits and safe food handling
- Practice and demonstrate a proficiency in basic knife skills
- Practice and demonstrate a proficiency in accurate weighing and measuring of wet and dry food ingredients
- Practice and demonstrate a proficiency in production of stocks and leading sauces
- Understand the theory and practice of basic cooking techniques
- Understand and develop a working knowledge of basic culinary terminology, this will be accomplished through lecture
- Practice and demonstrate the ability to identify various food products

Prereq. MAT 040

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

CUL 150 Baking & Pastry Foundations I

Students are introduced to the principles of baking, and to the skills and techniques needed for production of baked goods and pastries for commercial foodservice. Topics include planning, selecting ingredients, scaling, mixing, baking, assembling, and decorating. Students will practice hands-on development of these skills in a professional kitchen.

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

- Understand the theory and practice of basic baking techniques

- Understand the science of ingredient interaction in baking
- Practice and demonstrate a proficiency in accurate weighing and measuring (scaling) of wet and dry ingredients
- Practice and demonstrate a proficiency in proper mixing of ingredients
- Practice and demonstrate a proficiency in basic baking skills
- Practice and demonstrate a proficiency in production of various baked goods
- Practice and demonstrate the ability to assemble and decorate a variety of baked goods and pastries

Prereq. MAT 040

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

CUL 151 Baking and Pastry Foundations II

This course introduces the student to the fundamentals of Pastry Design and Plated Desserts. Students learn the basic and advance methods that enable them to produce components for plated desserts, garnishes, and buffet presentations. Students will be introduced to the basic and advanced processes of creating four star desserts. Students will learn the art of creating classical desserts, sauces, pulled candy and sugar work as well as holiday/multi-cultural confections.

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

- Use fundamentals of baking to create dessert buffet items
- Design and execute a dessert buffet presentation
- Understand the use of chocolate in candy and garnish production
- Prepare restaurant desserts such as Creme Brulee, Ice Cream, Soufflés and frozen desserts
- Design and execute components for plated dessert presentations
- Calculate costing and yield of plated desserts
- Use commercial baking equipment
- Prepare classical dessert and sauces
- Establish a professional bake shop

Prereq. CUL 150

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

CUL 210 Foodservice Purchasing

This course provides an overview of the process of selection and procurement used in various foodservice operations. Main topics include: distribution systems; purchasing goals and options; financial considerations; receiving, storage and issuing of food and non-food products.

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

- Understand the importance of effective purchasing
- Demonstrate knowledge of various purchasing options available in foodservice
- Exhibit the ability to develop product specifications
- Demonstrate the ability to determine appropriate purchase amounts
- Understand the financial responsibilities of a purchaser
- Identify the key strategies for directing the purchasing function
- Recognize the elements representing value in purchasing
- Identify various selection factors when purchasing both food and non-food

Prereq. MAT 040 Coreq: taken with CUL 215

3 Credits

3 Weekly Lecture Hours

CUL 215 Menu Planning & Cost Control

This course will present the menu as a vital management tool that influences all foodservice functions. It also presents various strategies for controlling costs with techniques for developing menu content, menu design and pricing.

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

- Understand the history of foodservice and the development of various cuisines
- Understand modern foodservice and how it meets current market demands by
- Exhibit the ability to plan and produce various types of menus, for commercial and non-commercial operations, to meet established criteria
- Demonstrate the ability to follow strategies for effective cost control and profitability
- Identify the key aspects of menu design and the importance of the menu as a merchandising tool
- Understand various methods of menu analysis and exhibit the ability to use resulting data

Prereq. MAT 040 Coreq: CUL 210

3 Credits **3 Weekly Lecture Hours**

CUL 220 Nutrition and the Hospitality Industry

This course is designed for the student preparing for a career in the hospitality industry. The student will learn the basic concepts of nutrition and understand how to apply them when designing menus for a variety of consumers. The student will also become familiar with proper food safety as well as state and federal nutrition-related regulations.

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

- Understand basic concepts of nutrients and nourishment
- Define vitamins, minerals, proteins, fats carbohydrates
- Comment on the current public health crisis involving childhood and adult obesity
- Apply the current FDA dietary guidelines when construction a daily menu
- Understand the concept of exchange lists
- Correctly identify the nutritional benefit of all ingredients in a meal
- Explain how to keep food safe with special emphasis on seafood safety

Prereq. ENG 050, REA 050

3 Credits **3 Weekly Lecture Hours**

CUL 230 Professional Cooking II

Students will practice and apply the skills and techniques learned in CUL 115 (Professional Cooking I) to: the production of soups and compound sauces; meat and seafood fabrication; food preparation for commercial foodservice; basic garde-manger production; plating and garnishing. Students will practice hands-on development of these skills in a professional kitchen.

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

- Practice and demonstrate the production of compound sauces and soups
- Practice and demonstrate meat, poultry and seafood fabrication and portioning
- Develop proficiency in food preparation skills and cooking techniques for commercial foodservice applications
- Practice and demonstrate basic techniques in garde-manger
- Identify various spices, herbs and food stuff
- Be able to prepare classical entrées
- Use culinary equipment and tools not normally found in American kitchens
- Expand the use of culinary terms and technology

Prereq. CUL 115

3 Credits **2 Weekly Lecture Hours**
2 Weekly Laboratory Hours

CUL 231 Garde Manger

Students will further develop the skills and techniques learned in CUL 230 (Advanced Culinary Skills and Techniques), with emphasis on volume cooking, plating techniques, plate presentation, and garnishing. Students will practice hands-on development of these skills in a professional kitchen.

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

- Demonstrate proficiency in classical and modern plate presentations
- Demonstrate proficiency in production and safe handling of volume foods for banquets and catering including soups, sauces, proteins, starches and vegetables
- Apply basic garde-manger skills in production of various cold foods
- Prepare hot and cold foods for buffet presentation

Prereq. CUL 230

3 Credits **2 Weekly Lecture Hours**
2 Weekly Laboratory Hours

CUL 232 International Cuisine

Students will learn to prepare Classical and International Cuisines, including Regional American, Asian, European, Latin and Middle Eastern foods. Students will practice hands-on development of these skills in a professional kitchen.

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

- Demonstrate proficiency in identifying ingredients from various world-wide cuisines
- Prepare regional American cuisine
- Prepare Classical French cuisine
- Prepare traditional and modern Latin cuisine
- Prepare a variety of Middle Eastern foods
- Prepare a variety of traditional and modern Asian cuisines
- Prepare a variety of European foods
- Prepare a variety of Indian foods

Prereq. CUL 230

3 Credits **2 Weekly Lecture Hours**
2 Weekly Laboratory Hours

(DPR) Computer Information Sys

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, MIS

software, and business simulation games on the Internet are used in this course.

Upon successful completion of this program, 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 109 Programming in Visual C#

This course introduces the student to the design and programming of a Graphics user Interface (GUI) using Microsoft's Visual Studio C# IDE. Students will learn to use the many predefined GUI objects as well as creating and using classes and objects of their own design. Additionally, students will learn how to apply the basic constructs that they learned to build "console" applications in graphical interface applications. Students will be introduced to Web based application development and how to build a Web Forms and run them in a browser. In support of the Web applications the course covers the use of the ADO.NET facility to access databases.

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

- Define the process of visual program design using objects oriented techniques.
- Use a variety of visual components to create a Graphic User Interface (GUI).
- Support visual components with variables, constraints and calculation.
- Use the appropriate logical constructs for decision making.
- Use a variety of program debugging tools.
- Create menus and submenus and use dialog boxes to interact with the user.
- Build projects and contain multiple forms.
- Develop reusable code.
- Create inoperative structures to manipulate data in list form.
- Establish and manipulate arrays.
- Create and use simple text files in applications.
- Explain the functions of the server and client in Web programming and create a Web Form and run it in a browser.
- Develop applications using Microsoft's Active Data Objects (ADO.NET) database technology and use it in a Web Application.
- (Optional) Use graphic functions to draw simple objects, animate those objects and add sound to applications.

Prereq. DPR 108

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 software, 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, files 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.

Prereq. REA 050

3 Credits

3 Weekly Lecture Hours

DPR 113 Database Management Systems

This course provides students with an introduction to data base concepts, data models and Data Base 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

4 Weekly Lecture 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 delete functions.
- Select and use character formatting features including all caps, bold, italics, underlining, double underlining, and line spacing, indenting and changing the case of letters.
- Enhance business memoranda and letters by changing the alignment, indents 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 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.

Prereq. REA 050

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.
- Develop 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 notable and commonly used Unix commands; the Unix shell as both user interface and programming environment; the Unix file system; the Unix networking subsystem; and bandwidth management under Unix.

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

- Discuss the features and benefits of the Unix operating system.
- Log onto and out of a Unix system.
- Discuss the Unix file naming convention.
- Construct both simple and enhanced Unix command lines.
- Describe and distinguish between the concepts of kernel, shell and file system.
- Discuss the file hierarchical structure.
- Employ both user- and administrator-oriented Unix commands in an effective manner.
- Identify the most significant characteristics of the Unix networking subsystem and Unix bandwidth management.
- Recognize and describe widely-used Unix applications such as Apache.

Prereq. 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. Note: This course is also offered as IMM 122 Programming for the Web. Students taking this course should not take IMM 122.

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 Credits

4 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 213 iPhone and iPad App Development using Objective-C

Covers the tools and skills needed to create applications for the iPhone and iPad mobile platforms. Learn about the process of becoming an iPhone and iPad developer for Apple and registering and selling apps in Apple's App Store. Use the core development tools used by app developers, which include Xcode and Interface Builder. In-depth use of Objective-C and the Cocoa Touch framework. Students will automatically be enrolled in Apple's iOS University Developer Program where students can download free versions of Xcode, access development tools, forum and code repositories. Therefore students do not need to pay to enroll in Apple's iOS Developer Program for this course. Students will need access to an Intel Macintosh computer with an operating system capable of running the most recent version of Xcode in order to complete assignments outside of class. Use of an iPhone or iPad in class is NOT a requirement. An onscreen simulator is available.

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

- Describe and use object-oriented principles in application development using Objective-C
- Create, edit, debug and compile projects in Xcode using Objective-C
- Apply appropriate user interface design techniques and standards to create intuitive, usable and efficient designs
- Identify the graphics formats, resolutions and specifications required for various iOS devices
- Understand memory management and delegation
- Use Cocoa Touch framework of classes to develop touch interfaces
- Create clean, efficient applications using the Model-View-Controller (MVC) Application Design
- Save data and preferences for iPhone and iPad applications
- Create apps utilizing the Media layer's frameworks for support of audio, video and animation
- Create apps implementing the Core Services layer to support system services such as the Address Book, Calendar, GPS, accelerometer and gyroscope features
- Develop apps that incorporate the various User Interface (UI) tools such as pickers, sliders, web view, image view, buttons, text view and switches
- Learn the techniques for resizing, rescaling and reframing an app screen when a device is rotated
- Create navigation-based apps that implement multiple views, toolbars, tab bars, and table views
- Learn about the process of becoming an iPhone/iPad developer for Apple and registering and selling apps in Apple's App Store

Prereq. DPR 108

3 Credits

3 Weekly Lecture Hours

DPR 214 jQuery/Java Script

jQuery is a fast, small, and feature-rich JavaScript library. In this course students learn to use jQuery, JavaScript and Ajax to include dynamic content and create feature-rich web sites. Also covers jQuery Mobile to build cross-platform mobile web pages.

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

- Learn to rapidly develop dynamic Web 2.0 applications with jQuery, HTML, CSS and Ajax.
- Enhance HTML, forms using jQuery validation and call web services.
- Build cross-platform, cross-device mobile pages using jQuery Mobile
- Animate web pages using jQuery effects
- Convert serialized server data to HTML using JSON
- Design sophisticated user interfaces with jQuery UI
- Use objects, methods and properties to manage and manipulate the elements of a web page using the Document Object Model

Prereq. DPR 108 and IMM 120 with a grade of C or better

3 Credits

3 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 subs and functions, and use code loops and control structures.
- Locate and correct coding problems using de-bugging tools.

Prereq. DPR 108

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

DPR 224 Android App Development

Android is the first complete, open and free mobile platform. The rate of new Android devices reaching world markets has continued to increase. It can be found on phones, tablets, eBook readers, consumer electronics and many other upcoming devices. In this course, students will learn to use the freely available Android SDK, Android Development Tools (ADT) along with Java and Eclipse, a popular integrated development environment (IDE) to develop apps for Android devices. Students will learn fundamental programming concepts using Java to create, edit, debug and compile projects in Android. Also covers the process of preparing and publishing Android applications to the Android Market.

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

- Describe and use object-oriented principles in application development using Java.
- Create, edit, debug and compile projects using Android SDK, Eclipse and Java
- Integrate image media to an application
- Use the camera and the gallery
- Implement location-based services (LBS) and use geocoding services and maps.
- Incorporate audio, video and animation into applications
- Create applications that effectively manage memory and system resources
- Configure basic application settings and use the Android manifest file

- Build applications with activity dialogs to react to user-driven events.
- Use common Android APIs
- Apply appropriate user interface design techniques and standards to create intuitive, usable and efficient designs
- Learn about the process of preparing and publishing Android applications to the Android Market

Prereq. DPR 108

3 Credits

3 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 108 or DPR 205

4 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory Hours

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. NET 100 and NET 110

3 Credits

3 Weekly Lecture Hours

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.
- Utilize knowledge of partitioning, formatting, fragmentation and defragmentation, disk caching, and troubleshooting of hard drives.
- Apply knowledge of FDISK, SCANDISK, CHKDSK and other similar disk drive utilities.

- Construct configuration files for optimal computer performance.
- Utilize CD-ROM drives, video cards, sound cards as well as audio CD use.
- Apply knowledge of caching, serial and parallel devices, mice, and keyboards.
- Apply knowledge of monitors, screen savers, video adapters, and video memory.
- Troubleshoot FireWire, serial and parallel ports and various bus configurations.
- Utilize knowledge of printers including types and troubleshooting techniques.
- Apply knowledge of various configurations and troubleshooting methods including DOS, Windows 3.1/95/98/NT/2000.
- Use various boot processes and methods as well as optimization techniques.
- Discuss compression, encryption, and dial-up networking techniques as well as network security topics.

Prereq. NET 100 and NET 110

3 Credits

3 Weekly Lecture Hours

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 designing.
- Develop a 2D level game using Game Maker software.
- Develop a 3D level game using Game Maker software.

Prereq. DPR 100

3 Credits

3 Weekly Lecture Hours

DPR 234 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 elements of game programming.
- Create a Windows program.
- Create a DirectX program.
- Use points, vertices and graphic primitives.
- Use DirectX3D textures to create a texture surface.
- Create a DirectX3D 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.

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

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 241 Mobile Web Development

Mobile devices have revolutionized the way we entertain ourselves, get our news, and keep in touch with the world around us. Web developers must now create websites and applications that work consistently on all major mobile platforms. Learn how to use your existing web skills to move into mobile web development. Covers the key differences in mobile app design and the architectures that support these technologies. Use current HTML, CSS and JavaScript standards to design mobile user interfaces. Learn to create dedicated mobile websites and how to convert a mobile web application into a native app that can be loaded into an iPhone or Android device.

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

- Understand current technologies and architectures that provide the network and communications infrastructure for mobile enabled computer systems
- Define and identify the importance, types and uses of various mobile devices
- List the various operating systems used in mobile devices and discuss their advantages and disadvantages
- Apply appropriate user interface design techniques and standards to create intuitive, usable and efficient designs
- Identify the appropriate development tools, IDEs and emulators for creating and publishing various mobile applications and web sites
- Design and create web sites for display on a variety of different mobile devices and screens
- Identify careers related to mobile computing and examine requisite skills
- Convert existing XHTML web sites to HTML5
- Use media queries to optimize pages for display on different sized devices
- Create cache manifests to make sites available offline
- Use jQuery Mobile for designing and developing mobile web sites that function like native applications
- Package a web application built with HTML, CSS and JavaScript for deployment as a native app on Android or Apple iOS using PhoneGap

Prereq. IMM 120, DPR 108

3 Credits

3 Weekly Lecture Hours

DPR 244 Flash Mobile Development

Use Flash, ActionScript and Flash platform technologies to create native applications for Google Android, Apple iOS and BlackBerry Tablet OS. Learn to develop and prepare device-ready features that include support for multi-touch events, motion sensor, gestures, accelerometer, and GPS. Design apps that use service integration for making phone calls, sending SMS messages, and e-mails and implement GoogleMaps. Explores using Adobe AIR to build web applications.

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

- Use Flash to create applications targeted to specific mobile devices including Google Android, Apple iOS and BlackBerry Tablet OS.
- Describe and use object-oriented principles in application development using ActionScript.
- Develop apps that support multi-touch events and gestures.
- Detect motions in an app and work with the Accelerometer.
- Enable GPS support and use Geolocation data with GoogleMaps.
- Integrate apps with mobile services such as phone, e-mail and SMS.
- Apply appropriate user interface design techniques and standards to create initiative, usable and efficient designs.
- Learn about the process of preparing and publishing Android applications to the Google Android Market and Apple's App Store.

Prereq. IMM 205, DPR 108

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:

- Complete job simulations with 70 percent or better accuracy.
- Compose letters, memos, and reports using spell checker and grammar checker.
- Apply the rules of grammar, punctuation and word division to documents.
- Use word processing, spreadsheet, database, graphic presentation skills and communications software to complete simulation projects.

- Use decision-support software such as electronic calendar, bulletin board, chat room and desktop publishing to complete office tasks.

Prereq. DPR 114

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 through 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 enhances career aspirations and broadens cultural perspective.

Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

DRA 105 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
- Work within a group and show an awareness of ensemble dynamics and cooperation

Prereq. ENG 050 and REA 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 100

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 theoretical concepts of acting.

Prereq. DRA 110 or Instructor Permission

3 Credits

3 Weekly Lecture Hours

DRA 114 Theatre Arts Practicum

This course is designed to give students practical experience in theatrical production of a play. Students can choose to work as actors, production crew members, or costume and wardrobe crew members in producing a play at Delaware County Community College. The play will be performed for paying audiences. This course gives students hands on experience in preparation for entering a career in Theatre and allows students to realize the intense collaborative nature of the Theatre.

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

- Work within a group and demonstrate an awareness of ensemble dynamics and cooperation.
- Demonstrate knowledge of the various production elements needed to produce Theatre.
- Safely operate tools and equipment used in the construction of sets, costumes and lighting design.
- Demonstrate a responsible work ethic and an understanding of working within a highly diverse group of artists.

1 Credit

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.
- Operate a basic lighting control board and sound equipment on cue
- 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

DRA 130 Voice and Movement

Voice and Movement is designed to introduce students to major vocal and movement techniques and practices used by professionals such as actors to maximize their effectiveness as public speakers and to create vibrant, multi-faceted characters for stage and film. This course teaches the inner workings of the human voice and the processes of articulation used to speak and pronounce sounds, and will emphasize the effective use of such techniques as proper breathing, stress, inflection, vocal quality, focus, rate of speech and pace, and others. Students will also learn various movement techniques such as gesture, mime, Alexander technique, Viewpoints, and the Suzuki method. The class will investigate the body/voice connection, and how these techniques work together in public speaking and in the creation of a stage or film character.

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

- Describe the physical actions and anatomical parts of the body used to produce sound and speech.
- Demonstrate in performance a knowledge of the different styles and methods of physical movement used in the art of speaking and acting.
- Apply tools and concepts learned to create an effective public speaking voice.
- Analyze a script or speech to identify rhetorical devices and rhythms of speech.
- Create a physical and vocal description of a theatrical character based on analysis of a script.
- Apply methods and techniques learned to manipulate the voice and physicality of the body in the creation and performance of a theatrical character.
- Work within a group and demonstrate an awareness of ensemble dynamics and cooperation.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

(ECE)Early Childhood Education

ECE 100 Principles of Early Childhood Education

This course examines the historical and philosophical background of early childhood education as well as the regulations that govern early childhood education in both the public and private sector. The impacts of social, economic and culture diversity on early learning will be explored as well as professional ethics and working effectively with parents. Students will also be able to explore career goals and develop a career plan.

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

- Describe the historical and philosophical basis of early childhood education.

- Describe the variety of settings that offer early childhood education.
- Identify the key stakeholders and their role in governance of early childhood education in both the public and private sector.
- Identify the key theories that influence teaching practice.
- Describe the relationship between teaching, learning and assessment in Early Childhood programs.
- Develop skills necessary to conduct ongoing objective observations for the purpose of child assessment, program planning and curriculum.
- Identify the role of culture and diversity in delivery of early childhood programs.
- Develop a professional development plan to meet career goals.
- Develop a positive climate for learning that involves the establishment and maintenance of partnerships with families.
- Use the NAEYC code of ethics to make decisions about professional practice.

3 Credits

3 Weekly Lecture Hours

ECE 110 Infant/Toddler Care and Education

This course will prepare the student to use a relationship-based model to develop and implement an active learning environment for infants and toddlers. Students will implement individualized curriculum that supports the infant/toddler's social, emotional, cognitive and physical development needs. (5 field observation hours are required).

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

- Implement a relationship-based model of care giving and teaching.
- Implement multiple approaches to learning and teaching.
- Effectively apply the principles of developmentally appropriate practice, constructivism, socio-cultural theory, activity theory and play in developing active learning experiences.
- Utilize Pennsylvania's early childhood learning standards in developing learning experiences.
- Implement lessons based on children's stages of cognitive development, use of senses for exploration and understanding of the world, and development of age appropriate problem solving and critical thinking skills.
- Design classrooms that demonstrates appropriate use of indoor and outdoor space.
- Design classrooms that are inclusive for diverse learners including differences in age, development, culture and linguistics.
- Select, provide and evaluate materials and create new materials consistent with learning standards.
- Explain the connection between materials, learning standards and instruction.
- Utilize child observation to make program and curriculum decisions.

Prereq. ENG 050

3 Credits

3 Weekly Lecture Hours

ECE 111 Methods and Materials for Teaching II

This course will prepare the student to develop and implement an active learning environment for children in Pre-K to 4th grade that incorporates classroom design, learning activities and inquiry based teaching strategies. Classroom design, play, and teacher/child interactions will be integral topics in this course.

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

- Implement multiple approaches to learning and teaching.
- Effectively apply the principles of developmentally appropriate practice, constructivism, socio-cultural theory, activity theory and play in developing active learning experiences.
- Utilize Pennsylvania's early childhood learning standards in developing learning experiences.
- Utilize supportive practices in teacher/child interactions.
- Design classrooms that demonstrate appropriate use of indoor and outdoor space.
- Design classrooms that are inclusive for diverse learners including differences in age, development, culture and linguistics.
- Select, provide and evaluate materials and create new materials consistent with learning standards.

- Explain the connection between materials, learning standards and instruction.
- Utilize child observation to make program and curriculum decisions.
- Develop and implement effective classroom management strategies.

Prereq. ECE 110

3 Credits

3 Weekly Lecture 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.

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.
- Understand the importance of lifelong learning.
- Develop a portfolio utilizing key components, artifacts for inclusion, and resources necessary to demonstrate professional competency.

Prereq. ENG 050

1 Credit

ECE 120 Early Childhood Education Laboratory I

These courses provide the student an opportunity to function as a member of an instructional team in an approved nursery school, child care center or Head Start program. The students activity is carefully supervised by a qualified in-service classroom teacher and the Colleges supervisor of the field experience. The courses also include a weekly seminar discussion of issues rising from this laboratory experience. This course requires ninety hours of field experience.

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

- Use a variety of effective instructional strategies.
- Integrate play based, project based and experience based teaching as an integral part of childrens development.
- Implement lessons based on childrens developmental needs.
- Utilize observation and assessment to guide and support teaching and learning through differential instruction.
- Exhibit a professional attitude toward assigned responsibilities.
- Communicate effectively with children, and teachers.

Prereq. ECE 100, ECE 110, ECE 130 with a grade of C

4 Credits

1 Weekly Lecture Hour

6 Weekly Laboratory Hours

ECE 121 Early Childhood Education Laboratory II

These courses provide the Early Childhood Education student an opportunity to function as a member of an instructional team in an approved nursery school or day care center. A qualified in-service classroom teacher and the Colleges supervisor of the field experience carefully supervised the students activity. The courses also include a weekly seminar discussion of issues arising from this laboratory experience. Ninety hours of field experience is required.

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

- Implement lessons based on students stage of cognitive development using a multisensory approach that supports exploration and understanding of the world.
- Create environments that are educationally focused, respectful, supportive and challenging for all children.
- Implementation of an integrated program that includes all content areas across the learning standards.
- Use of methods that support childrens development in all domains and content areas.

- Implement accommodations and modifications for diverse learners.
- Use appropriate interactions between teachers and students and among students.
- Construct and implement lesson and activity plans that set instructional goals and objectives guided by content, pedagogy, and development considerations that are consistent with Pennsylvania's learning standards.

Prereq. ECE 111 with a grade of C or better.

4 Credits

**1 Weekly Lecture Hour
6 Weekly Laboratory Hours**

ECE 130 Early Childhood Development

This course examines the cognitive, physical, social and emotional development of the young child from conception through the early childhood period. Students will integrate and apply the major concepts and theories of child development to the early childhood classroom. Students will also have the opportunity to observe the principles of child development by conducting field observations for each age group studied. (Ten hours of outside field observations will be required).

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

- Identify the multiple interacting influences on children's development.
- Identify universal and diverse child development principles.
- Know and understand the characteristics and needs of young children.
- Know and understand normative development for language, cognitive, physical, social and emotional development.
- Apply knowledge of child development to the early childhood classroom.
- Describe the developmental patterns of change, physical, cognitive and socioemotional in infancy and early childhood.
- Observe children and record behavior in variety of settings in order to understand variation and exceptionality in individuals.

Prereqs. REA 050, ENG 050, ENG 100

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.
- Evaluate the basic techniques used in observing young children.
- Employ effective observing and recording techniques in an early-childhood setting.

Prereq. ECE 130

3 Credits

3 Weekly Lecture Hours

ECE 140 Curriculum Development Program Planning and Instruction in Early Childhood Education

This course will prepare the student to develop curriculum for preschool, kindergarten, and primary age children based on the principles of developmentally appropriate practices. Integral to this course is developing a program that considers regulations, national standards and continuous quality improvement in program and curriculum planning.

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

- Develop effective and appropriate curriculum that creates a secure base from which young children can explore and tackle challenging problems.

- Develop and implement meaningful, challenging curriculum that supports young children's ability and motivation to solve problems and think well.
- Develop curriculum that includes both planned and spontaneous experiences that are meaningful and challenging for all children that lead to positive learning outcomes and develop positive dispositions towards learning within each content area.
- Evaluate the principal theories that influence current curriculum in early childhood education.
- Analyze the theories and practices that influence current program planning in early childhood education.
- Detail the basic problem with implementation of an early childhood curriculum.
- Develop curriculum that is culturally and linguistically responsive and addresses the needs of diverse learners.
- Integrate observation and assessment in curriculum planning.
- Develop a comprehensive individual theory of curriculum, program planning and instruction in early childhood education.

Prereq. ECE 130 with a C" or better

3 Credits

3 Weekly Lecture Hours

ECE 201 Children Families and Community

This course will prepare the student to implement an educational environment that builds a community of learners whose members are children, families, community members and teachers. Building relationships is integrated into practical strategies for partnering with families and communities to facilitate children's learning.

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

- Implement a positive climate for learning that involves partnering with diverse families and communities.
- Identify the role of culture on children's development and learning.
- Articulate the potential impact of differences in cultural practices between home and school.
- Maintain respectful, ongoing, meaningful communication with family members that sustain partnerships with families.
- Provide meaningful opportunities for families to be involved in their child's education.
- Develop strategies for keeping families informed of children's progress.
- Communicate effectively with other early childhood professionals.
- Identify community resources and utilize those resources in program planning.
- Advocate for children and families in the larger social and political arena.

3 Credits

3 Weekly Lecture Hours

ECE 210 Educating the Exceptional Young Child

This course examines the psychological, physical and emotional facets of atypical young children, and methods for teaching and handling these children. To assist students in gaining this knowledge in a well-organized manner, this course is structured into areas of competence.

Upon successful completion of course requirements, students should be able to:

- State the basic information in this area of education.
- Depict the results of mental retardation.
- Assess speech and language disorder.
- Identify hearing and visual impairment and construct good learning environments for such children.
- Develop methods of educating handicapped children.
- Determine appropriate learning strategies for educating disabled young children.
- State various methods for educating emotionally disturbed children.
- Suggest activities and techniques for educating gifted young children.

3 Credits

3 Weekly Lecture Hours

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.

Prereqs. 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.

Prereqs. AAS or AS in ECE or related field OR completed 45 hours towards an AAS 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.

Prereqs. 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

(ECO) Economics

ECE 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.

Prereq. MAT 060

3 Credits

3 Weekly Lecture Hours

ECE 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:

- 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, monopolistic 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. MAT 060

3 Credits

3 Weekly Lecture Hours

(EDU) Education

EDU 110 Introduction to Teaching

This course provides students with an introduction to the field of teaching and learning. Students will become familiar with teaching as a career choice and state requirements for becoming a certified teacher. The foundations, history, and philosophy of education will be examined and students will gain an understanding of modern education in our society. Students will also examine the impact of current issues on American education today. To assist students in gaining knowledge in a well organized format, the course is structured into four areas of competence: historical and philosophical foundations; teachers and students; schools and curriculum; and finances, government, and legal concerns.

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

- Develop background in education foundations, theory and policy, including understanding current issues with historical and philosophical background including inclusionary practices. (PDE Competencies)
- Develop background in education foundations, theory and policy, including understanding social, economic and cultural diversity, and implications for learning. (PDE Competencies)
- Develop background in education foundations, theory and policy, including general and professional ethics. (PDE Competencies)
- Demonstrate understanding of the way in which classroom environments influence childrens learning including the connection between classroom materials, learning standards, and instruction. (PDE Competencies)
- List the advantages and disadvantages of teaching as a career choice.
- Understand how teachers develop a professional reputation and obtain employment.
- Describe and utilize the resources at Delaware County Community College that will assist them in achieving their career goal including advising, Career Center, Program Guides, resource meetings, Media Center, and PRAXIS information.
- Develop a statement of their philosophy of teaching and learning that is research based.
- Understand the diversity of students and student needs (educational, social, cultural, behavioral) and the responsibility of a classroom teacher to these needs.
- Understand and analyze the major developments of the history of education, especially as they relate to school reform.
- Use resources at DCCC to plan their educational program, choose a transfer institution, and identify the steps they need to take to complete a teacher education program.
- Become a more reflective learner, with particular regard to personal skills and attitudes as they compare and contrast their readiness with the vocation of becoming a classroom teacher today.
- Comprehend the practical aspects of education, including governance, politics, funding, law, and societal impacts.

Prereq. ENG 050 and REA 050 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. The teacher must maintain an effective classroom environment, understand how this environment impacts learning, be an effective instructor, and work collaboratively with families.

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

- Create and maintain environments that are educationally-focused, respectful, supportive and challenging, and that promote the healthy development of all students
- Effectively apply the principles and theories of child development, including developmentally appropriate practice, and constructivism
- Implement lessons based on educational foundations, theory and policy, including general and professional ethics
- Demonstrate understanding of the way in which classroom environments influence students learning including design of classrooms, appropriate use of indoor and outdoor physical space and materials, the connection between a positive climate for learning and partnerships with parents, the connection between classroom materials, learning standards and instruction, and the use of appropriate organizational techniques for the classroom
- Diversity - Plan, implement and adapt, for all students, developmentally, culturally and linguistically appropriate instructional practices and strategies including creation of learning environments that encourage emotional, social, language, cognitive, physical and creative development and inclusive for diverse learners, including differences in age, development, culture and linguistics
- Understand the value of and strategies for creating a community of learners by maintaining a positive social context for learning by setting developmentally, culturally, linguistically and individually appropriate expectations for children and fostering understanding of values that underpin procedures, rules and expectations
- Understand the value of and strategies for creating a community of learners by establishing and maintaining a positive social context for learning by individualizing behavior support including the use of prompting, environmental arrangements, scheduling, visual supports, involving families and outside resources, by helping children develop self and emotional regulation, and responding to children's emotional communications
- Understand the value of and strategies for creating a community of learners by establishing and maintaining a positive productive social context for learning by communicating high learning expectations, establishing and maintaining fair and consistent standards for classroom behavior, respecting and supporting developmental differences, creating a safe physical environment that is conducive to learning, and using appropriate interactions between teacher and students and among students
- Understand the value of and strategies for creating a community of learners by establishing and maintaining a positive social context for learning by giving attention to equitable learning opportunities for students and engaging and re-engaging students who are struggling
- Know family systems and the role of families in children's development.
- Articulate the potential impact of differences in values, languages, socio-economics and customs that can exist between the home and school

Prereq. ENG 112 and EDU 110

3 Credits

3 Weekly Lecture Hours

EDU 206 Teaching with Technology

This course is an introduction to online teaching and learning. Its purpose is to increase the students' understanding and awareness of online teaching styles and strategies, as they relate to today's technologies. This course will combine educational theory with computer-based activities to complement major course concepts. The course emphasizes practices, concepts and theories applicable to any level of teaching and/or online learning. Such knowledge will help students develop skills that will influence how they practice teaching with technology in either a classroom or online environment.

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 PK-college level education.
- Discuss the foundations and history of distance education.
- Discuss and apply the major theories of distance education.
- Identify and analyze the role teachers play in contributing to classrooms without walls.
- 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 curriculum.
- Discuss and critique issues related to use of computers in education, including security, equity, copyright and ethics of using the Internet in the classroom.
- Demonstrate technical skills in the development and organization of online lesson plans and their application in the classroom.
- Explain and implement instructional design strategies.
- Define and explain the role of the teacher and student in distance education.
- Name appropriate professional development resources for maintaining currency in the field.
- Identify and demonstrate the best practices associated with online materials, assessments, and evaluation.
- Integrate technology in curriculum planning and in lesson delivery (PDE competency).
- Increase awareness of the use of technology to differentiate instruction for student populations such as special education students, English Language Learners, and gifted students.
- Create an e-portfolio using the college system and using products developed in coursework.
- Explain perceptions and barriers associated with online teaching and learning.
- Use appropriate technology during instruction to enhance the understanding of subject matter (PDE competency).
- Construct appropriate applications of technology to specific instructional situations.
- Design or develop appropriate instructional technology-based applications.
- Use techniques involved in developing technology-based instructional materials in various formats.
- Students are expected to know how to read and write effectively using correct form, grammar, and punctuation. Students are also expected to have basic knowledge of computer applications, have the ability to use an internet browser, have an active e-mail account, and internet access.

Prereq. EDU 110

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 comprehension instruction.
- Observe, identify, learn and practice the different models and strategies for teaching work study instruction.
- Understand how technology can be integrated into literacy instruction.
- Design balanced literacy instruction that includes listening, speaking, reading comprehension, fluency development, 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/multi-ethnic classrooms

Prereq. ENG 112

3 Credits

3 Weekly Lecture Hours

EDU 208 English Language Learners

This course focuses on the development of foundational knowledge for teacher education students to assist English language learners successfully in their future classrooms. Students will gain a basic understanding of the processes of second language acquisition and an understanding of the influence of culture on the educational process as viewed from current theoretical and pedagogical perspectives. The course content follows Pennsylvania Department of Education's guidelines for pre-service teachers for meeting the instructional needs of English Language Learners.

The basic premise of the course is that teachers play an important role in creating a positive classroom learning environment and bringing school success, especially for English language learners. Students will be supported to develop essential dispositions, skills, and knowledge to fulfill this important role while exploring the issues of culture, language, learning contexts, instruction and professionalism. Students will study these five major courses topics through courses readings, class discussions and cultural explorations of our own and others' cultures while engaging in individual, social, and experiential learning opportunities together.

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

- Demonstrate knowledge of language systems, structures, functions, and variation
- Identify the process of acquiring multiple languages and literacy skills, including the general stages of language development
- Identify the differences between academic language and social language
- Identify socio-cultural characteristics of English language learners including educational background and demographics
- Describe how English language learners' cultural communication styles and learning styles affect the learning process
- Describe how English language learners cultural values affect their academic achievement and language development
- Identify bias in instruction, materials and assessments
- Demonstrate cross-cultural competence in interactions with colleagues, administrators, school and community specialists, students and their families
- Observe culturally and/or linguistically diverse instructional settings
- Integrating research, concepts and theories of second language acquisition to plan customized instruction for English language learners

- Integrating the PA Language Proficiency Standards (ELPS) for English Language Learners in PreK-12 grades to guide effective instructional planning and assessment
- Implement appropriate research based instructional strategies to make content comprehensible for all English language learners
- Using collaborative, co-teaching models for serving English language learners
- Demonstrating knowledge of the legal responsibilities as well as professional resources and organizations related to serving English language learners
- Identify issues related to standards based formative and summative assessments for all English learners
- Define common terms associated with English language learners

Students must have completed ECE 130 or EDU 110 with a grade of C or better

Recommended: Students should be able to read and understand the textbook, and have competent writing and organizational skills to allow them to complete assignments.

Students should be able to use the internet for research

Prereq. ECE 130 or EDU 110 grade a C or better

3 Credits

3 Weekly Lecture Hours

EDU 215 Theory and Field Experience In Elementary Education, Pk-4

This course will provide an orientation to various aspects of teaching in K-4 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 30 hours of observation in the field.

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

- Create environments that are educationally-focused, respectful, safe, supportive and challenging for all children (PDE PK-4 Competencies: Development, Cognition, and Learning, C)
- Establish and maintain fair and consistent standards for classroom behavior (PDE PK-4 Competencies: Professionalism)
- Construct a variety of lesson and activity plans and set instructional goals and objectives guided by content, pedagogy and developmental considerations, consistent with PAS learning standards (PDE PK-4 Competencies: Professionalism)
- Demonstrate an understanding of and the ability to plan for: type, identification, prevalence, effective, evidenced-based instructional practices and adaptations (PDE PK-4 Competencies: Development, Cognition, and Learning, A)
- Demonstrate use of assessment data to implement instructional and/or programmatic revisions for quality improvement (PDE PK-4 Competencies: Assessment)

Prereq. Students must have completed 15 credit hours to include ENG 100 and EDU 110. In addition, students must obtain the standard criminal background checks that are required for those who work in school settings. These include a fingerprint check, a Criminal Background Check (Act 34) and Child Abuse History Clearance (Act 151) prior to beginning the course. Background check forms are available online. The teacher will explain how to access them.

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:

- Describe the process through which a student may become eligible to receive special education services
- Describe the types of services and resources that students with disabilities may receive and the settings in which they may receive them.
- Name the components of an individualized Education Program
- Understand the differences between high incidence and low incidence disabilities
- Demonstrate an understanding of how to adapt instructional materials for students with disabilities
- Identify significant events that have shaped this history of special education law and teaching methods
- Explain the uses of different types of assessments
- Develop the ability to evaluate and assess students needs
- Analyze a classroom environment for effective teaching practices in meeting the diverse needs of special populations
- Obtain additional field experience and utilize it to complete course requirements
- Create products for an e-portfolio

Prereqs. Students must have completed 30 credit hours to include ENG 112 and PSY 140.

3 Credits

3 Weekly Lecture Hours

EDU 231 Education Society and Culture

In this course students will explore how historical changes in society and culture have influenced education from 1960 to the present. This course examines critical issues that impact education such as the changing purpose of schools, the expanding influences of the federal government and globalization, as well as the use of Hip Hop Pedagogy in 21st Century Classrooms, and the role of adults in children's world. This is an exploratory course designed for students of all academic interests and professional paths.

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

- Understand the major social norms and policies shifts from 1960 to the present that impact schooling
- Evaluate the three competing goals of education and how each has influenced education in the modern era
- Describe the impact of educational policies from 1960 to present as it pertains to personal development
- Demonstrate critical thinking in examining educational reforms and programs in the modern era
- Analyze the Youth Empowerment Social Movement of the 1960s-1970s
- Develop a broader understanding of the diversity, complexity and individuality of 20th and 21st century schooling experiences in the United States and abroad

Prereq. ENG 050, REA 050 or pass test

3 Credits

3 Weekly Lecture Hours

(EGR) Engineering

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.

Prereq. MAT 140 - math placement test score

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory 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.

Prereq. ENG 050 and REA 050

1 Credit

1 Weekly Lecture Hour

EGR 200 Engineering Statics

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.

Prereq. MAT 161 and PHY 131

3 Credits

3 Weekly Lecture Hours

EGR 201 Engineering Dynamics

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.

Prereq. or Coreq. EGR 200 and MAT 261

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 Kirchhoff'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.
- Set up and solve for the general solution 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.

Prereq. PHY 132, Coreq. MAT 261

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory 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; reversible and irreversible 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 successful completion of this course, students 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.

Prereq. PHY 132, MAT 161, CHE 110

3 Credits

3 Weekly Lecture Hours

(EGRT) Engineering Technology

EGRT 200 Introduction to Nanotechnology

This course is an introduction for the Engineering Technology (EGRT) students to the physical, chemical and biological principles of nanotechnology. The course provides information on prevalent nanofabrication methods and materials, and familiarizes the students with the tools of Nano measurements. The history, societal impact and the involvement of nanotechnology in everyday life are also discussed.

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

- An understanding of the effects and phenomena at the Nano scale that control the properties and applications of various materials
- An understanding of basic top-down and bottom up nanofabrication methods

- Knowledge of the specific properties of nanomaterial and how to use them most effectively
- An understanding of the properties of Nano composites and fibers important for technology applications
- Knowledge of the tools for Nano measurements
- Knowledge of basic ideas in Nano biotechnology and medical nanotechnology
- An appreciation of the role of nanotechnology in sustainability and society

Prereq: ENG 050, REA 050, MAT 151

3 Credits

3 Weekly Lecture Hours

EGRT 201 Circuit Analysis I

A first course in circuit analysis for engineering technologist. Introduction to the key engineering technology terms, basic laws and theorems of electric circuits by concentrating on Direct Current (DC) circuit analysis, power, and energy. The topics include the basic principles of different DC circuit topologies containing passive elements, including transient circuit analysis. Different Circuit theorem, Source conversions will also be explored. Theory will be illustrated by hands-on laboratory experiments, software simulation and class assignments.

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

- Define voltage, current, resistance, power and discuss their characteristics
- Describe a basic electric circuit
- Apply Ohm's Law and Power Law to determine voltage, current, or resistance
- Properly select resistors based on power consideration
- Apply Kirchhoff's voltage and current laws
- Apply voltage and current division in circuits' analysis
- Apply Norton's and Thevenin's theorems to simplify a circuit for analysis
- Apply the Superposition and maximum power transfer theorem
- Use laboratory instruments (DMM, power supplies etc.) and state-of-the-art electrical circuits simulation software to measure various electrical quantities
- Describe a basic approach to troubleshooting

Prereq: MAT 152, PHY 111

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

EGRT 202 Circuit Analysis II

The objective of this hands-on lecture/laboratory course is to introduce Engineering Technology (EGRT) students to fundamentals of AC (Alternating Current) circuit analysis. Topics include introduction to time domain (transient) analysis of R, L, C, elements and energy storage in inductive and capacitive circuits. The response of source-free RL, RC and RLC circuits are developed followed by response to constant voltage and current sources.

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

- Identify a sinusoidal waveform and measure its characteristics
- Describe angular relationships of sine waves
- Analyze series and parallel capacitors
- Describe how a capacitor operates in a dc and ac circuit
- Determine impedance and phase angle in a series and parallel RC circuit
- Analyze series and parallel inductors
- Determine impedance and phase angle in a series and parallel RL circuit
- Analyze a circuit for series and parallel resonance
- Describe how a transformer is constructed and how it works
- Understand the concept of a reflected load in a transformer
- Understand impedance matching with transformers
- Determine the response of RC, RL, and RLC circuits impulse
- Use laboratory instruments (DMM, Oscilloscope, Power Supplies, Function Generators, Frequency Counter, etc.) and state-of-the-art electrical circuits simulation software to measure various electrical quantities

Prereq: EGRT 201

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

EGRT 203 Digital Electronics

The objective of this hands-on lecture/laboratory course is to introduce Engineering Technology (EGRT) students to fundamentals of digital electronics starting with the Binary number system and proceeding to Logic gates, Boolean algebra, Combinational logic circuits and the basic Arithmetic units used in digital computers such as Half-adders, Full-adders, Multiplexers, De-multiplexers, Encoders, Decoders, Latches, Flip-flops, Counters and Shift registers, etc. A BCD seven segment display will be analyzed and implemented.

Upon successful completion of this course, student should be able to:

- Interpret binary and hexadecimal numbers, including BCD and signed numbers
- Describe the parameters associated with digital voltage-vs.-time waveforms
- Describe the operation of and draw truth tables for basic logic gates
- Interpret schematic diagrams utilizing logic gate symbols and determine outputs for various input conditions
- Convert between Boolean equations and logic circuit diagrams
- Apply Boolean algebra laws and De Morgan's theorem to simplify combinational logic circuits
- Explain the design and operation of a half-adder and full-adder circuit
- Explain the operation of a two's-complement adder/subtraction circuit and a BCD adder circuit
- Explain the internal circuit operation of S-R and gated S-R flip-flops
- Explain the operation of D flip-flops and J-K flip-flops
- Solve various counter design applications using 4-bit counter ICs
- Explain the operation of astable and monostable multivibrators
- Use laboratory instruments (DMM, Oscilloscope, Power Supplies, Function Generators, Frequency Counter, etc.) and state-of-the-art electrical circuits simulation software to measure various electrical quantities

Prereq: EGRT 201

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

EGRT 204 Analog Electronics I

The objectives of this course are to introduce Engineering Technology (EGRT) students with the basics of semiconductor physics, semiconductor devices and their properties/applications. The structure, properties, design and analysis of the pn junction diodes, rectifiers, regulators, limiters, clamping, bipolar junction transistor, transistors as amplifiers (common emitter, common collector, common-base, multistage, etc.) are discussed. The operation of power amplifiers (Class A, Class B, and Class C). Field Effect Transistors (JFET, and MOSFET) and FET amplifiers are introduced as well.

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

- Understand the basic of semiconductor physics
- Analyze current conduction in semiconductors
- Explain the performance principles of pn diodes
- Understand the operation of rectifiers, limiters and regulators
- Determine structure and function of special diodes (Zener, Varactor)
- Explain the operation of a bipolar transistor and amplifying capability: CE, CC, and CB Amplifier design using Transistor
- Design bias circuits for transistors
- Determine the operation of amplifier types (differential, common mode, multistage)
- Analyze power amplifiers (Class A, B, C)
- Understand the operation of Field Effect Transistors
- Analyze FET amplifiers
- Use laboratory instruments (DMM, Oscilloscope, Power Supplies, Function Generators, Frequency Counter, etc.) and state-of-the-art electrical circuit's simulation software to measure various electrical quantities

Prereq: EGRT 202

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

(EGY) Energy Technology

EGY 100 Understanding the Economics of Today's Energy Business

Instruction in the course provides a comprehensive overview of the North American energy industry and the current technological, economic, and political environment in which the industry currently finds itself. Availability for consumers; the basic of system operations, including generation, transmission, and distribution; the characteristics and pros and cons of the different methods of electrical generation; the classes of the electricity consumers and the needs and characteristics of each consumer class will be addressed in this course. The history of the electric industry, including the history of regulation, deregulation, and market restructuring; the wholesale and retail electric marketplace, marketplace participants, and the various market structures will be studied.

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

- Briefly describe the history of the electrical industry including the roles of key figures in its development, and summarize the current electricity marketplace including the importance of electricity in modern societies and the trends in its usage in the U.S. and the world.
- State what electricity is in simplest terms, describe electrons and conductors, and give examples of electricity sources and energy consuming devices. Identify electrical terms that correlate to the concepts of rate of flow, pressure, and friction or resistance in the analogy of water flowing in a pipe, and utilize Ohm's law to predict the effect of changing voltage or resistance on current.
- Explain in basic terms how electricity is created through both chemical and electromagnetic means and name the minimum components required for batteries and generators. Describe common useful tasks that use the magnetism, heat, and light effects of electrical flow.
- Describe how electrical distribution is accomplished, list the four key physical sectors involved and note the unique physical properties of an electric deliver system that must be managed for the system to work.
- Name the three customer categories of the electricity business and relate how much electricity they currently use and are expected to use in the future, how they use it, the differences in their usage patterns over the year, the average rate for kWh they each pay and why the rates are different.
- Define generation and list and describe the different types of generating systems and their characteristics, costs and environmental concerns, explain how each type is used to meet the demand curve, and how 'demand response' helps meet generation needs.
- List the different types of owners of generation, describe how they evaluate needs and develop capacity, and name likely future generation sources.
- Define electrical transmission, list the types of transmission, describe the physical characteristics of the transmission system, and explain who owns transmission systems and how they operate and plan the systems. Note the costs of the systems, the current status of the transmission grid and issues with new construction.
- Describe radial feed, loop feed, and network system distribution systems and their relative costs and advantages, and list the types of system ownership and the current status of distribution systems in the country.
- Identify the critical concerns of the physical electric systems, the role of system operations, who is responsible for systems operations, and how supply and demand are matched using the scheduling of generation, reserves and transmission. Describe how system operations are changing.
- Identify the market participants and their roles in both the vertically integrated and competitive market models.
- Define electric market structure, describe the structures currently in the U.S., their goals and how they function, and how different structures address daily system operation.
- Discuss the historical basis for regulation, who the regulators are and their goals, and how they establish rates and rules. Explain what tariffs are, the rate case process, the various types of regulatory proceedings, how regulation

works for both monopoly utilities and wholesale sales, and what incentive regulation is and how it works.

- Define the restructuring is, show why it can be beneficial to consumers, trace how markets mature as they are restructured, and name the components needed for a competitive marketplace and how those components are implemented.
- Describe the recent history of electric market restructuring in the U.S., what has been happening elsewhere in the world, the current status of restructuring in the U.S., and what different states have done and are doing and the role of FERC.
- Illustrate how electric supply and demand fluctuate, explain how wholesale prices are set and why they are volatile and how the wholesale and retail marketplace work.
- Describe in basic terms how the various electric market participants create profits under both traditional and incentive ratemaking, list key skills for creating profits, explain what risk management is, why it is important, and how market participants manage risk using physical and financial instruments. Differentiate between hedging and speculating and show how VAR is used to measure risk levels.
- Portray how the generation, transmission, distribution, system operations, and retail sales sectors may each evolve in the future and describe a possible future of sustainable energy.

3 Credits

3 Weekly Lecture Hours

EGY 101 Power Plant Industry Fundamentals

This course provides a comprehensive overview of power plant fundamentals and the challenges and advantages of major electrical power generation unit types. A very basic understanding of the principles of thermodynamics as well as the theory and design of fossil, nuclear, hydro, solar, and wind generation systems and related equipment, along with storage technologies will be addressed. Maintenance and operational requirements and special concerns involved in each type of generation are addressed. Topics of instruction consider the difficult choices faced by developers of electrical generation facilities for accommodating costs and environmental concerns, as well as ensuring reliable and economical fuel/energy supplies are available for customer needs. Options for future generation systems and the related advantageous choices each holds for future sources of electricity for the US will be studied. Research reports on the subject matters and sub-topics related to power generation are required of participants in this course.

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

- Discuss the overarching principles of an electrical generation facility.
- List the main types of electrical generation facilities, and as an overview, identify the engineering, maintenance, operational and environmental challenges common to all types.
- Describe the design of coal generating stations, the operational characteristics and the major components of a plant.
- Discuss the varied challenges associated with burning of coal, as well as how these challenges are met, and describe why coal is the most used fuel for the production of electricity.
- Describe combustion turbine generating system components and their operations.
- Discuss the limitations and advantages of using natural gas as a fuel for electricity production.
- Explain the basics of nuclear fuel generation theory as well as plant design, and describe the components and operation of pressurized water reactors.
- Describe the components and operation of boiling water reactors.
- Explain the principles of hydroelectric generation and discuss the operational concerns associated with same.
- Explain how electricity is produced within a solar cell and by solar thermal systems as well, listing the limitations and potential for using the sun to meet electric power needs.
- Describe how wind energy is converted to electricity, relating the limitations and advantages of wind power.
- Relate the processes and environmental advantages of creating electric power from biomass.
- Describe how municipal solid waste power generation

benefits to the environment using municipal solid waste.

- Describe the methods for generating electricity via ocean currents, ocean waves, tides and ocean thermal differences.
- Identify the challenges of using geothermal energy electricity production.
- Explain the basic operation of a fuel cell.
- List the components, processes and power storage technologies associated with compressed air, flywheels, super-conducting magnetic energy, NaS batteries, flow batteries and nickel-cadmium batteries
- Relate the process of storing energy in the form of hydrogen, citing the advantages and disadvantages of using hydrogen to capture and create electrical energy.
- List and explain current concerns for power plant operations including fuel availability and environmental restrictions.
- Discuss likely priorities for future generation plant investments, renovations and modifications.

Coreq: EGY 100

3 Credits

3 Weekly Lecture Hours

EGY 201 Energy Systems Piping and Tubing

This course is designed for students pursuing employment in the varied occupational fields of power plant maintenance and operations. Piping systems covered in this course include chemical, pneumatic, hydraulic, fuel oil, steam, and water. Drawings and detail sheets, to include Piping and Instrumentation, Drawings (P&ID's) specific to power plant piping and tubing will be covered. Applicable codes, classification systems, and testing of piping/tubing systems will also be addressed. Valve, and steam trap design, terminology, application, and operation will be included. Quality control and abnormal operating conditions associated with power plant piping systems are covered as well.

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

- Discuss the piping systems used to distribute industrial water, air and other gases, steam, waste-water and lubricants.
- Install and maintain pipe/tubing, valves and fittings.
- Identify various metal pipe and fitting materials comparing strength ratings, safety factors, and methods/tools used for cutting and joining each.
- Cite the accessories associated with the installation of pipe and tubing, such as, but not limited to, hangers, expansion joints, and insulation.
- Compare the different types of plastic pipe materials, citing specifications, and proper methods of preparation and assembly.
- Describe the composition, fabrication, and use of hoses utilized to convey liquids and gases.
- Describe the function, operation, and maintenance of varied general purpose valves to include: check, gate, globe, pressure reducing, and Sloan valves.

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

EGY 203 Thermodynamics of Energy Systems

This course provides, in a practical approach, an introduction to the theory, principles, calculations, and practices associated with heat transfer, fluid flow, and the thermodynamics applicable to the varied types of equipment used in power plants for the production of electricity. Topics of coverage are centered around the theories and calculations involving energy equations, steam tables, and diagrams, heat transfer cycles/equations, and laws associated with pumps (in relationship to the efficient and safe operation of power plant equipment and systems). Students will perform theoretical calculations and demonstrate the safe operations of a steam generation unit while performing laboratory exercises related to the below listed competencies.

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

- Identify basic thermodynamic principles associated with the heating and cooling of fluids, to include: the properties of water and steam, as well as temperature and sensible heat.
- Describe the development of qualitative and quantitative

concepts of work, energy and heat.

- Discuss the application of the first law of thermodynamics for both non-flow, and flow systems, with relevance to the basic energy equations applicable to the associate systems.
- Describe the second law of thermodynamics, respectively, that all forms of energy are not equivalent in their ability to perform useful work.
- Describe the state of a system based on the observable properties of pressure, temperature, and volume.
- Discuss the relationship between pressure and volume of gases and predict qualitatively the behavior of most gases.
- Explain the thermodynamic importance of the mixture of gases and the products of combustion (both internal and external).
- Define a vapor power cycle (as a series of thermodynamic processes in which a working fluid can undergo an energy transition) with regard to conversion of energy from one form to another for a more purposeful use.
- Differentiate between internal and external combustion, and describe the sequence of events of two and four stroke cycle engines, along with the reliability that is essential in the development of mechanical energy.
- Describe the performance criteria associated with power cycles, and the Carnot cycle, along with a study of the reverse Carnot cycle, explaining the many thermodynamic limitations and performance criteria associated with refrigeration cycles (only as the theory applies to the production of electricity).
- Define the three mechanisms of heat transfer (conduction, convection, and radiation) relating same to an industrial application, where, simultaneously phenomena may occur requiring consideration when designing for, or analyzing, heat transfer.

Prereqs: EGY 101, MAT 111, TME 115

Coreqs: PHY 101, PCT 100 (Note: PCT 101 co-requisite is waived as these students are not Process Technology majors).

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

EGY 205 Electrical Energy Production

This course is designed to introduce the electrical power production technician to the integral phases, processes, and equipment associated with the generation of electricity. The study of processes leading to the ultimate production of electricity (via generation) will include: fuel handling, boilers, prime movers, and most importantly generators (environmental concerns will be addressed for each phase of production). The inter-relationships among the three areas of electricity production; generation, transmission, and distribution will also be covered. Aspects of distributed generation (the installation of small units to meet industry needs) will be included as well. Green power units such as fuel cells, solar power, and renewable energy for the production of electricity will also be discussed.

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

- Discuss use, as it relates to the planning and development of electric power stations to include site selection, construction cost, fuel cost and the types of power station units available.
- Relate energy conversions necessary for electricity production, namely; combustion, heat and temperature, and compare and contrast fuels.
- Describe the handling processes (as they relate to delivery, storage, utilization, and waste recovery) associated with electric power generation plant fuels.
- Relate varied furnace type requirements, heat sources, furnace combustion, types of fuels used, and the rate of combustion necessary to produce steam efficiently.
- Identify the make-up of a boiler, heat transfer tubes, heater elements, fuel burners, air supply (both forced and induced draft), feed water, heat exchangers, and steam vessels.
- Explain and demonstrate the operation of an electrically powered boiler (as a steam generator).

- Elaborate on the internal combustion engine, reciprocating steam engine and steam turbine, with regard to utilization as a prime mover for electricity production (describing their use in converting heat energy to mechanical energy for use in driving electric generators).
- Describe the design and operation of various generator types, relating the use of magnetism for their operation.
- Explain the properties of electric generators, with regard to output, phasing, series vs. parallel operation, synchronization, and how each is type of generator is used for producing electricity.
- Discuss the coordination of the equipment and processes necessary for producing electricity; namely, the appropriate actions necessary for operators to achieve safe, efficient, and reliable electricity generation.
- Describe the relevance of the three broad classifications of maintenance (normal, emergency, and preventive) with respect to the operation of an electric power plant.
- Utilize fuel to site the basis reasons for the implementation of green power.
- Compare and contrast green power systems with regard to the generation of electricity, to include; wind, fuel cells, solar, hydro, nuclear, geo-thermal, micro turbines and bagasse (burning of vegetation).

Prereq: TME 115, Basic Technical Skills and TEL 101 DC Analysis CoReq: TEL 102 and CHE 106

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

EGY 207 Planning Scheduling and Maintenance

This course is designed to provide students with an introduction to the field of power plant maintenance, with an emphasis on systematic approaches to planning and scheduling. Students will gain practical exposure to the systematic methodologies associated with structuring and arranging for the performance of work in a proactive, rather than reactive manner. Roles, responsibilities, task descriptions, and performance criteria of plant maintenance and operator technicians will be addressed. Engagement of plant maintenance and plant operator technicians in team work will be stressed.

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

- Describe the general requirements of a maintenance planning and scheduling program.
- Elaborate on the role of a plant operator for maintenance planning and scheduling.
- Identify the multidiscipline skills and knowledge the maintenance technician must possess in order to perform assigned tasks.
- Relate the documentation requirements for an effective maintenance program.
- Discuss how to organize oneself for determining/performing scheduled maintenance.
- Gather and evaluate information in order to design a personal check-list for bringing work assignments to a desired conclusion.
- Utilize a systematic approach in order to plan as well as prepare for completion of maintenance functions.
- Participate, as a team player, in prescribed action leading to completion of work assignments.
- Complete/submit appropriate documentation in a prescribed format and manner.
- Formulate, via observation and reasoning, recommendations for the improvement of maintenance procedures.

Prereq: IST 101, Industrial Systems and Drives; IST 105, Industrial Systems Drawing Interpretation; IST 200, Pumping Systems; PCT 100, Plant Equipment; PCT 112, Power Plant Systems; TME 115; Basic Technical Skills; EGY 101, Power Plant Industry Fundamentals

2 Credits

2 Weekly Lecture Hours

(ELT) Electrical Occupations

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 addition to general lighting needs.
- Re-cable an upgraded kitchen from Rip-out to Reinstallation. This will require calculating circuit loads, determining 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 ungrounded 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

Introduction to Electricity will equip students with the fundamental skills essential to perform in the various fields of electricity. This course of study emphasizes safe working procedures in a construction environment and the proper installation methods of materials in accordance with the National Electrical Code (NEC). Students will learn how voltage current and resistance are related to each other and to calculate electrical solutions to determine unknown values using Ohm's Law formulas. Students will learn methods, materials, electrical connections, cable types, sizes and current capacity of conductors; followed by methods of installation of lighting, receptacles, and switching circuits used in a residence.

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

- Interpret electrical drawings including site plans, floor plans, and detail drawings.
- Identify the types of lines and symbols used on blue prints.
- Apply safe electrical practices and the basic safety rules for working on electrical systems.
- Calculate the potential, current, and resistance of an electrical circuit using Ohm's law.
- Describe and install the different types of electrical outlets, boxes, switches, and other basic electrical materials used in electrical installations.
- Demonstrate an understanding of the proper installation techniques for single-pole, three-way, four-way, double-pole switches and split receptacles.
- Select the proper code requirements for calculating branch circuit sizing and loading.
- Understand the basics of typical family dwelling heating and air conditioning system and associated major components and to interpret related schematic wiring diagrams.
- Calculate 'volt-amperes per foot' for calculating general lighting loads.
- Specify and apply over-current protection devices for conductors and the maximum loading on branch circuits.
- Interpret electrical plans to determine special installation and wire connection requirements for major residential appliances.
- Understand the terminology used when discussing grounding and bonding requirements.
- Compute electrical loads and select proper conductor sizes and over-current devices for dedicated circuits in compliance with NEC.
- Explain the difference between conductors and insulators.
- Install typical residential low-voltage lighting, telephone and television CATV wiring in conformance with NEC.
- Demonstrate an understanding of the shock hazard associated with electrical work.

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

ELT 152 Electrical Code

This course will acquaint the students with the many aspects of the National Electrical Code. The National Electrical Code is the basic code that governs all electrical installations. The course will offer the student the opportunity of learning proper application of the code to all facets of the electrical installation.

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

- Apply the National Electrical Code index in referencing a question.
- Cite a proper interpretation as to the intent of the National Electrical Code.
- Identify tables applicable to various situations.
- Cite the evolution of the National Electrical Code.
- Identify and apply proper over current protection devices for a circuit in accord with the Code.
- Apply minimum Code requirements to a floor plan of a residence, relating outlet locations, and minimum service entrance size and number of circuits required.

2 Credits

2 Weekly Lecture Hours

ELT 200 Commercial Wiring

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 main power components 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 trouble shoot common residential electrical system problems.
- Draw basic Wye and Delta transformer diagrams and make 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.

Prereq. ELT 102

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

ELT 202 Industrial Electric II

This course will include heavy coverage in the areas of transformer selection and installation, AC circuits, AC motor control, industrial lighting and electric heat.

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

- Describe the effect of high- and low-power factors on alternating current circuits.
- Cite the methods for producing single and multi phase voltages.
- State the construction and operating characteristics of transformers, illustrating the various types of transformer connections and discussing the results of these connections.
- Detail the construction of various AC motors.
- Demonstrate a knowledge of the construction and operation of various types of motorcontrollers and protective devices.
- Determine the amount of light required for various areas and types of work.
- Lay out and select the correct lighting fixtures for various areas.
- Explain the operation of electronic motor controls.

Prereq. ELT 201

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

ELT 203 Industrial Electrical Systems

This course provides the student with an introduction to various electrical systems and devices used in a manufacturing/commercial facilities environment. Students will learn how to identify the function of electrical components, to include relays, sensors, switching/other devices and circuits. Instruction will include the theory and use of electrical instruments, to install and make repairs as well as identify, troubleshoot isolate and remedy problems. Emphasis will be placed on electric motors and motor controls. Topics of instruction will cover installation of electrical conduit, wiring, motors and other devices. Upon successful completion of this course, the student should be able to:

- Define the terminology associated with common/basic electrical systems and devices.
- Describe the operational characteristics and applications of various sensing devices.
- Identify and describe the function of basic control circuits/components.
- Contrast electrical starting and braking methods.
- Compare wound rotor, synchronous and consequent pole motors.
- Conduct job planning routines for various electrical component and system installations/repairs/replacements.
- Determine sizes and install electrical conduit, boxes, wiring, etc. with regard for engineered work plans and appropriate standards.
- Install motor controls and motors.
- Discuss and troubleshoot sensing devices and circuits, to include ground faults.
- Determine a methodology for troubleshooting various distribution and control circuits. Troubleshoot variable frequency AC motor drives.

Prereq. TCC 111, TEL 101, IST 105

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

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.
- Decipher 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.

Prereq. 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.

Prereq. Residential Wire, ELT 101

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory 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 main power components 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 trouble shoot common residential electrical system problems.
- Draw basic Wye and Delta transformer diagrams and make 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 connects 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.

Prereq. ELT 205

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

ELT 207 Industrial Wire

This course introduces students to basic fundamentals of installation and control of electricity in the industrial setting. Students will gain knowledge of proper wiring methods, conductor sizing, transformers, generators, motors and motor controls in the industrial building. Also covered are circuit calculations for parallel, series, and combination circuits. The student will gain understanding of trouble shooting various electrical faults associated within industrial facilities and what components comprise a unit substation and application of a feeder bus-way system.

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

- Describe the methods for determining various motor connections.
- State the construction and operating characteristics of transformers, illustrate the various types of transformer connections.
- Demonstrate knowledge of the construction and operation of various types of motor controllers and protective devices.
- Demonstrate knowledge of industrial wiring methods using various types of conduits, raceways and cables associated with power distribution throughout an industrial facility.
- Calculate electric loads required within a major industrial facility.
- Describe and apply the primary power distribution systems in an industrial facility from the public utility through the main switchboard and to the various power distribution panels within the structure.
- Draw required ladder diagrams for control circuits.
- Understand the construction of motors, controllers, and transformers.
- Describe the functions and how to use electrical test equipment.
- Describe the basic construction and operation of AC and DC generators.
- Apply and connect various manual and automatic motor starters.
- Discuss the methods of connecting motors, controllers, generators and the basic trouble shooting procedures.
- Describe the various types of motors, motor controllers, conductors and overload devices.

- Describe the differences and applications of alternating and direct current.
- Describe the different types and characteristics of standby emergency generators.
- How to size and select feeder, and over-current protective devices for motors.
- Understand the term power-factor of an A/C circuit as it relates to the ratio of apparent power compared to the true power.

Prereq. ELT 206

4 Credits

2 Weekly Lecture Hours
3 Weekly Laboratory Hours

ELT 208 Solar Photovoltaic System Design and Installation

This International Renewable Energy Council (IREC) focused course is designed to introduce students to grid tied photovoltaic (PV) systems. In this course students will learn the benefits of a grid tied system and the positive impact on the environment these systems can have. At the conclusion of this course students will have the basic knowledge and understanding in design and installation of residential and commercial buildings. This course is patterned after the Job Task Analysis set by the North American Board of Certified Energy Practitioners (NABCEP) Entry-Level Solar PV exam and also fulfills the prerequisite of related experience and education required sit for the industry certification. The certification is not included in the course

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

- Demonstrate a thorough knowledge of the safety requirements applicable to solar PV system installation & maintenance, including electrical, work-site, and personal safety.
- Accurately interpret and apply the National Electrical Code to solar PV system design and installation, with emphasis on a thorough working knowledge of NEC Article 690 "Solar Photovoltaic Systems", and PV system grounding & bonding, overcurrent protection, wire and conduit type & sizing, and PV system labeling.
- Identify PV system monitoring and maintenance needs, and specify service procedures and schedule to keep system operating safely and efficiently throughout service life.
- Identify the appropriate layout, orientation, and mounting method for the modules/array, inverters, and other system components, with attention to electrical efficiency, mechanical integrity, site requirements, maintenance access, and safety.
- Conduct an accurate site survey to determine location suitability for a solar PV system, including adequate solar access, sufficient area and structure, proper orientation, and options for placement of PV modules, inverters, and other equipment.
- Install inverters, charge controllers, disconnects and overcurrent protection devices, meters, surge protection and grounding equipment, junction boxes, batteries and enclosures, system monitoring equipment, conduit, and other system hardware in conformance with equipment manufacturers' guidelines, the system design, the NEC, the utility company, and the local authority having jurisdiction.
- Draw a basic site plan, showing site details and equipment layout
- Obtain and accurately interpret solar radiation and temperature data for the site and solar PV module and inverter performance specifications, determine customer energy use and needs, and then calculate the required PV system output and configure a solar PV system from available components to produce the required output
- Determine the local requirements for utility interconnection, and select an appropriate utility interconnection point and method in conformance with the local utility company, the local authority having jurisdiction, and the NEC.
- Identify opportunities to reduce energy, demand via building performance and/or electric equipment upgrades in order to optimize PV system size and create an efficient, integrated electrical system.
- Calculate design voltages and currents for all circuits within the PV system, and select the appropriate conductor type

and rating for each circuit, taking into account all de-rating factors and voltage drop. Verify that the array operating voltages and currents are within the operating limits for the inverters or charge controllers, that the ampacity and insulation ratings of all conductors conform to NEC requirements, and that voltage drop losses are within acceptable limits.

- Determine the proper size, rating, and location for PV system overcurrent protection and disconnect devices, and for all grounding, bonding, surge suppression, and lightning arrest equipment
- Draw complete one-line and three-line wiring diagrams for grid-tied and off-grid solar PV systems. Properly identify and connect all system equipment, conduit and conductors, specify conduit and conductor type & size, and specify location and text of all NEC required labels
- Individually inspect and test PV modules, install module mounting and support structure per manufacturers' recommendations and design, insuring proper structural attachment and weather sealing, and install modules and interconnect wiring with attention to electrical safety and code compliance.
- Install, label, and terminate all electrical wiring, verify proper connections, phase/polarity relationships, and continuity, and measure impedance of the grounding system.
- Measure PV system performance and operating parameters, compare with equipment specifications and design calculations, and assess the operating condition of the system. Perform diagnostic tests to isolate the cause of deficiencies or malfunctions, and specify corrective action. Disconnect PV system from all power sources to allow for safe servicing or replacement of equipment.
- Identify applicable local, state, and federal incentive or rebate programs, determine the requirements for application, approval, installation, maintenance, and system monitoring and metering, and integrate all requirements into the PV system design and installation. Identify required documentation and record-keeping to insure compliance with such programs.

Prereq. ELT 152 and ELT 205 or Certified Electrical License

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

(EMER) Emergency Mgt. and Plan

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 functionalies 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.

3 Credits

3 Weekly Lecture Hours

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 terms "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.

Prereq. EMER 105

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.

Prereq. EMER 105

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 material regulations.
- Develop a plan of action to reduce or alleviate hazards.
- Implement a plan of action to reduce or alleviate hazards.

Prereq. EMER 105

1 Credit

1 Weekly Lecture Hour

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 for 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.
- Coreqs. FEMA Incident Command System Levels IS100 and IS700. Ten patient assessment contacts.

Prereq. MAT 040, REA 050

9 Credits

7 Weekly Lecture Hours

4 Weekly Laboratory Hours

(EMS) Emergency Med Services

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.
- Utilize pharmacological agents in management of the respiratory system.
- Utilize manual and mechanical interventions in management of the respiratory system.
- Distinguish between respiration, pulmonary ventilation, and external and internal respiration.
- Describe pulmonary circulation.
- Describe voluntary, chemical, and nervous regulation of respiration.
- Outline essential parameters to evaluate the effectiveness of airway and breathing.
- Describe the indications, contraindications, and techniques for supplemental oxygen delivery
- Discuss methods for patient ventilation.
- Describe the assessment techniques and devices used to ensure adequate oxygenation.

Prereq. EMS 100

3 Credits

**2 Weekly Lecture Hours
1 Weekly Laboratory Hours**

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 factors that affect assessment and decision making in the pre-hospital setting.
- Outline effective techniques for scene and patient assessment and choreography of patient assessment and personnel management.
- Identify essential take-in equipment for general and select patient situations.
- Outline strategies for patient approach that promote an effective patient encounter.
- Describe techniques that permit efficient and accurate presentation of the patient.

3 Credits

**2 Weekly Lecture Hours
2 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.

- Discuss how an organ's motion may contribute to injury in each body region depending on the forces applied.
- Identify selected injury patterns associated with motorcycle and all-terrain vehicle (ATV) collisions.
- Describe injury patterns associated with pedestrian collisions.
- Identify injury patterns associated with sports injuries, blast injuries, and vertical falls.
- Describe factors that influence tissue damage related to penetrating injuries.

5 Credits

**3 Weekly Lecture Hours
4 Weekly Laboratory Hours**

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.

Prereq. BLO 150

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.

Coreq. EMS 203

2 Credits

**1 Weekly Lecture Hour
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 the body 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.

4 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 genitourinary 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.

Prereq. EMS 210

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

EMS 220 Paramedic 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.

6 Credits

**4 Weekly Lecture Hours
4 Weekly Laboratory Hours**

EMS 221 Paramedic Concepts and Practices I

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, 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.

Prereq. EMS 220

6 Credits

**4 Weekly Lecture Hours
4 Weekly Laboratory Hours**

(EMTP)EMT Paramedic

EMTP 100 Introduction and Patient Assessment

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 and drug information will be presented. Experiments and case studies will be presented. It will also provide the student with theory, concepts and the applications necessary to measure the pre-hospital scene and its surroundings. 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:

- Define the roles and responsibilities of the paramedic in the Emergency Medical Service (EMS) systems 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 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.
- Identify communication strategies necessary to collect information, interview and assess patients.

Requirements:

Current Pennsylvania Emergency Medical Technician Certification. Students currently certified by National Registry Emergency Medical Technician must also obtain a Pennsylvania EMT Certification.

Current Cardio Pulmonary Resuscitation Certification issued by an approved third party accreditation body as identified by the PA Bureau of Emergency Medical Services.

Successful completion of physical examination (including drug screening) performed by the hospital employee health department.

Clear criminal background check as mandated by PA Bureau of EMS.

Clear child abuse clearance as mandated by the PA Bureau of EMS.

BIO 150 - Anatomy and Physiology I with a grade of "C" or better that was completed within 5 years.

BIO 151 - Anatomy and Physiology II with a grade of "C" or better that was completed within 5 years.

Prereq. BIO 151, NUS 102

6 Credits

3 Weekly Lecture Hours

6 Weekly Laboratory Hours

EMTP 101 Pharmacology and Airway Management

This course is designed to stress practices applicable to the paramedic practitioner. Emphasis is 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. The student will utilize the knowledge of anatomy and physiology of the respiratory system to 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:

- Identify the components of human anatomy and physiology as they relate to care for the sick or injured.
- Identify the proper use and administration of drugs for various body systems.
- Explain pharmacological characteristics, mathematical principles, and purpose in administering pharmacological agents.
- Identify communication strategies necessary to collect information, interview and assess patients.

- Discuss the assessment and management of the respiratory system.
- Identify the anatomy and physiology of the respiratory systems.
- 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.
- Utilize pharmacological agents in management of the respiratory system.
- Utilize manual and mechanical interventions in management of the respiratory system.
- Distinguish between respiration, pulmonary ventilation, and external and internal respiration.
- Describe pulmonary circulation.
- Describe voluntary, chemical and nervous regulation of respiration.
- Outline essential parameters to evaluate the effectiveness of airway and breathing.
- Describe the indications, contraindications, and techniques for supplemental oxygen delivery.
- Discuss methods for patient ventilation.
- Describe the assessment techniques and devices used to ensure adequate oxygenation.

Requirement: Certification as a current Emergency Medical Technician and current CPR provider.

Prereq. EMTP 100

6 Credits

3 Weekly Lecture Hours

6 Weekly Laboratory Hours

EMTP 102 Trauma Assessment and Management

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 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 the injury patterns that should be suspected when injury occurs from blunt trauma.
- Describe the role of restraints in injury prevention and the injury patterns.
- Discuss how an organ's motion may contribute to injury in each body region depending on the forces applied.
- Identify selected injury patterns associated with motorcycle and all-terrain vehicle (ATV) collisions.
- Describe injury patterns associated with pedestrian collisions.
- Identify injury patterns associated with sports injuries, blast injuries and vertical falls.
- Describe factors that influence tissue damage related to penetrating injuries.

Attain certification in Pre-Hospital Trauma Life Support.

Requirement:

Certification as a current Emergency Medical Technician and current CPR provider.

Prereq. EMTP 101

5 Credits

3 Weekly Lecture Hours

4 Weekly Laboratory Hours

EMTP 103 Cardiology

This course is designed to prepare the paramedic student to manage numerous types of cardiology emergencies. Topics including the etiology and epidemiology of cardiopulmonary diseases and conditions will be discussed as well as the means of identifying and describing the function of 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.
- Attain certification in Advance Cardiac Life Support.

Requirement: Certification as a current Emergency Medical Technician and CPR provider.

Prereq: EMTP 101

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

EMTP 104 Medical Assessment and Management

This course is designed to prepare the paramedic student to manage numerous types of medical emergencies. This course will provide the student with information necessary to effectively perform in medical emergency situations pertaining to neurology, hematology, endocrinology, allergy, anaphylaxis, gastroenterology, urology and toxicology.

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

- 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 the body 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.
- Distinguish between poisoning by ingestion, inhalation, and injection.
- Recognize conditions relating to drug and alcohol abuse.
- Identify key structures and normal functions of the urinary system.
- Describe detailed pathophysiology and assessment of urinary system disorders.
- Identify abdominal and genitourinary 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.

Requirements: Certification as a current Emergency Medical Technician and CPR provider.

Prereq: EMTP 101

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

EMTP 105 Clinical Rotations I

This course is an incorporation of the skills and practices that each student will need to accomplish during the in hospital clinical sessions. The clinical document required by the Committee on Accreditation of Educational Programs for Emergency Medical Services Professions (CoAEMSP) outlines the specific encounters with the patient that each student must successfully achieve during clinical and hospital sessions. In addition, topics such as intravenous medications bolus through intravenous line, communicating, relaying patient information, and trauma including hospital procedures will be covered.

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

- Perform a comprehensive identification, assessment and management of a variety of advanced life support patients in the in-hospital setting.
- 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 for patients in a variety of in-patient and out-patient clinical settings.
- Demonstrate appropriate assessment, communications and management for pediatric patients.
- Demonstrate appropriate assessment, communications and management for psychiatric patients.
- Demonstrate appropriate assessment, communications and management for trauma patients.
- Demonstrate appropriate assessment, communications and management for intensive care unit and intermediate care patients.

Prereq: EMTP 101

2 Credits

4 Weekly Laboratory Hours

EMTP 200 Summative Field Clinical

Summative Field Clinical is a Capstone course. Students will enroll in this course only after demonstrating skill and knowledge in the didactic and laboratory components of the program. Students will perform and manage an effective assessment of the patient. The student will learn the appropriate procedures to gather, evaluate and synthesize information as well as make appropriate decisions based on that information and be able to take the necessary action for patient care. The student will be expected to achieve proficiency by performing these skills on actual patients in a clinical setting. Integrating pathophysiological principles, physical examination findings, formulating a field impression and implementing treatment for the patient with common complaints will be practiced during this time. Alternative learning experiences (simulations, programmed patient scenarios, etc.) will be available as needed. Proficiency in performing all steps and procedures safely and properly will be thoroughly evaluated.

Upon successful completion this course, students should be able to:

- Demonstrate and discuss how assessment-based management contributes to effective patient and scene assessment.
- Demonstrate and describe factors that affect assessment and decision making in the pre-hospital setting.
- Demonstrate the proper application and performance of basic life support skills.
- Demonstrate safe practices in the pre-hospital environment.
- Recognize the need of advanced life support interventions.
- Outline effective techniques for scene and patient assessment and choreography of patient assessment and personnel management.
- Identify and utilize essential take-in equipment for general and selected patient situations.
- Outline strategies that promote an effective patient encounter.
- Describe techniques that permit efficient and accurate presentation of the patient.
- Demonstrate the ability to serve as a team leader in a variety of pre-hospital emergency responses.
- Demonstrate proper performance of advanced life support procedures and skills.

- Apply the appropriate advanced life support skills in an emergency situation.

Requirements:

Certification as a current Emergency Medical Technician and CPR provider.

Prereq: EMTP 105

8 Credits

16 Weekly Laboratory Hours

EMTP 201 Operations and Special Patient Populations

This course is designed to provide the student with information necessary to effectively perform in specific medical emergency situations. Infectious diseases, disease transmission pathways, behavioral and psychiatric illnesses, obstetrical and gynecological emergencies and rescue operations will be covered.

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

- Distinguish among the recognition, transmission, and pathophysiology of infectious diseases.
- Discuss the paramedic's 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 physiology of menstruation and ovulation.
- Describe the structure and function of processes during pregnancy.
- Describe detailed assessment and management of obstetrical and gynecological emergencies.
- Discussion and demonstration of rescue operations.
- Attain certification in Pediatric Advanced Life Support.

Requirement: Certification as a current Emergency Medical Technician and CPR provider.

Prereq: EMTP 104

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

EMTP 205 Clinical Rotations II

This course addresses skills and practices each student needs to successfully complete during the in-hospital clinical sessions. The clinical document required by the Committee on Accreditation of Educational Programs for Emergency Medical Services Professions (CoAEMSP) 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 experienced, as well as numerous in hospital miscellaneous procedures.

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

- Perform a comprehensive identification, assessment and management of a variety of advanced life support patients in the in-hospital.
- 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 for patients in a variety of in-patient and out-patient clinical settings.
- Demonstrate appropriate assessment, communications and management for pediatric patients.
- Demonstrate appropriate assessment, communications and management for maternity patients.
- Demonstrate appropriate assessment, communications and management for labor and delivery patients.
- Demonstrate appropriate assessment, communications and management for burn patients.

Prereq: EMTP 105

2 Credits

4 Weekly Laboratory Hours

(ENG) English

ENG 100 Composition I

This course reviews the principles of composition including rhetoric, grammar and usage and emphasizes critical thinking, the recursive nature of writing, the writing of analytical essays and the application of college level research skills.

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

- Demonstrate organizational skills in constructing an essay with an introduction, conclusion and transitions.
- Compose coherent essays with cogent arguments supported by primary and secondary sources.
- Apply college level critical thinking and writing in various rhetorical situations.
- Use appropriate rhetorical techniques for a specific writing task.
- Evaluate appropriate rhetorical techniques for a specific writing task.
- Evaluate appropriate academic sources to support an original thesis.
- Assess, evaluate, and synthesize appropriate sources to produce a research paper with appropriate documentation.
- Employ a variety of prewriting, drafting, and revision strategies.
- Apply formal conventions of written English with respect to grammar, mechanics and punctuation.

Prereqs. Students who score at the development level on both the writing and reading placement tests are required to successfully complete Developmental Reading (REA 050) and Developmental English (ENG 050) before taking Composition I. Satisfactory scores on standardized tests can also qualify students for ENG 100.

3 Credits

3 Weekly Lecture Hours

ENG 112 English Composition II: Writing About Literature

ENG 112 is a writing course emphasizing both literature and research that reinforces basic principles of composition learned in ENG 100. The course develops critical thinking through the study of literature and the use of advanced research techniques to write analytical/critical and research essays.

Upon successful completion of this course, student should be able to:

- Demonstrate critical thinking and writing in response to literature.
- Compose original, thesis-based analytical/critical essays in response to literature.
- Express ideas logically and clearly using appropriate rhetorical techniques.
- Analyze fiction, poetry, drama, and other literature using the elements of literature from different critical perspectives.
- Access and evaluate source material using current information literacy skills.
- Synthesize source material using MLA documentation in a plagiarism-free, multi-source essay/research paper based on a work of literature.
- Revise, edit, and proofread to produce final drafts applying formal convention of American English with respect to grammar, mechanics and punctuation.

Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

ENG 115 Research for English Majors

This course introduces English majors to the organization, retrieval and evaluation of electronic and print information in their field. Students will understand the evolving nature of information in the digital age. Emphasis will be on developing viable research questions, using academic library systems effectively, evaluating traditional and emerging scholarly resources in a variety of formats, and using the information in an ethical manner by citing resources according to current MLA standards.

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

- Distinguish between literary criticism; book, film and theater reviews; and biographical articles
- Identify critical approaches to literature, such as feminist, Marxist, reader-response, psychoanalytical, etc.
- Identify major journal databases and aggregate databases in their field (includes e-books and e-ref books) such as JSTOR and the Gale Literature Resource Center
- Use advanced features of databases, such as Boolean searching, limiters, etc.
- Become familiar with features of online book catalogs at Delaware County Community College Library and other academic and public libraries. Evaluate literary criticism in books and essays
- Use reference book/e-books, handbooks and Internet to retrieve cultural, historical and background information on authors, literary movements, timelines and literary theories
- Evaluate the role of "free" Internet web sites in the field of English and related areas of study, such as grammar sites, ready reference sites, citation generators, Google Books, Google Scholar, Open Source Movement
- Demonstrate knowledge of MLA citation standards for a variety of resources
- Be aware of software and user services relevant to their field, such as subscription citation generators (endnote, reworks), turnitin, and smarthinking

Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

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 200 The Magic of Harry Potter

Many dismiss the Harry Potter books as "children's" literature or, even worse, as works with no redeeming value. In this class we will illuminate how the novels not only are for all ages but how they educate, inspire and move us. In a close examination of the novels, clips from some of the films and many critical articles, we will develop a rich understanding of the themes, messages, power and magic that have made the series the best-selling of all time.

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

- Analyze a novel from several perspectives of literary criticism.
- Analyze a film using basic film terms and critical concepts.
- Incorporate outside sources and research into a multi-page analysis essay.
- Annotate a written work for greater comprehension.

Prereq. ENG 112

3 Credits

3 Weekly Lecture Hours

ENG 205 Creative Writing

This is a workshop-intensive course in which students will examine and create various elements of prose and poetry. The workshops are an integral part of any creative writing courses, and they are designed to provide students with critical and constructive feedback that will help move them from the planning stage through to the revision process. Therefore, the major focus will be student submissions; over the course of the semester, students will read, analyze and critique classmates' submissions ' a process which will help yield more effective works of prose and poetry.

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

- Recognize the elements necessary to build effective works of poetry and prose.
- Create prose that demonstrates the ability to establish fully developed characters that can move through a unified narrative structure.
- Craft poetry that effectively employs sound, rhythm, images, language, structure and syntax.
- Examine and evaluate prose and poetry in order to distinguish the most effectual elements of each genre.
- Synthesize criticism and analysis to create dynamic poetry and prose.

Prereq. ENG 112

3 Credits

3 Weekly Lecture Hours

ENG 206 Creative Writing: Non-Fiction and Memoirs

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:

- Describe and discuss the work of important nonfiction texts in terms of structure, dramatic arc, central metaphors and symbols, physicality, and dialogue.
- Describe the different types of creative nonfiction: personal essay, memoir, travel writing, profile/biography, feature article/literary journalism, food writing, etc.
- Gather research for a nonfiction piece.
- Create nonfiction pieces that include narrative, scene development, character development, dialogue, description, and reflection.

- Compose drafts and develop a revision plan.
- Share work with fellow writers with a intent of considering feedback and potentially incorporating the ideas of others.

ENG 112 or permission of instructor

3 Credits

3 Weekly Lecture Hours

ENG 207 Creative Writing: An Introduction to Playwriting

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

3 Credits

3 Weekly Lecture Hours

ENG 208 Creative Writing II: Short Story

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 to 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 vivid characters, compelling scenes and sustained conflict.

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

- Recognize and the elements necessary to build effective works of fiction, including: characterization, narration, setting, scene, plot, theme and conflict
- Create works of fiction that demonstrate the ability to lead characters through a cohesive narrative structure
- Analyze and evaluate prose in order to discern the literacy elements which produce the most success in prose
- Synthesize criticism and analysis to create dynamic and effectual works of fiction

Prereq. ENG 112 or permission of instructor

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 to the revision process. Therefore, the major focus will be student submissions; 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.

- Create 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 effectual poetic works.

Prereq. ENG 112 or instructor permit

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 and Detective Fiction

This course is a study of the genre of mystery and detective fiction. It will focus on the development of the genre and the evolution of its various schools such as Golden Age mysteries, hard-boiled detective novels, and the police procedural. The course will also call attention to the cultural contexts in which these writings were produced.

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

- Identify literature as the product of a particular cultural climate.
- Examine the role of literary elements in the reading selection.
- Recognize the characteristics of the distinct schools within the mystery and detective fiction genre.
- Compose critical essays that analyze mystery and detective fiction.
- Discuss the development of mystery and detective fiction genre.
- Trace the correlations between mystery and detective fiction and other literacy genres.

Prereq. ENG 112

3 Credits

3 Weekly Lecture Hours

ENG 216 Science Fiction Literature

This course is a study of speculative writing that creatively represents the hard sciences and/or the social sciences in fiction. It will focus on the different subgenres found within the genre and will call attention to the cultural contexts in which these writings were produced.

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

- Identify literature as the product of a particular cultural climate.
- Discuss the development of science fiction as a genre and its relationship to other literacy genres.
- Discuss the characteristics of the different subgenres within the genre of science fiction.

- Recognize the ways in which science fiction writers encourage critical assessment of the real world.
- Examine the use of literacy elements found in the reading selections.
- Compose critical essays that analyze science fiction.

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.

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.
- Trace some ideas through works of each period; i.e., the concept of warrior, of women, 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 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 nature, of imagination and of women.
- Identify the personal myth structure of each of the major writers.
- Analyze literary forms such as allegory, sonnet, lyric, satire and short story.
- Develop and present 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 the particular types of plays and poetic verse of Shakespeare.
- Reconstruct the text of Shakespeare's plays in order to view them as dramatic productions.
- Examine how literary elements function within Shakespeare's work.
- Read and comprehend Shakespeare's language.
- Analyze Shakespeare's writings as products of the Renaissance cultural climate.
- Recognize the correlations between historical context and literary sources in Shakespeare's work.

Prereq. ENG 112

3 Credits

3 Weekly Lecture Hours

ENG 230 American Literature - Shaping the Ideal

This course is 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, colonials, 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

In this course, students will be introduced to the many types of literacy genres in the Bible. Students will learn how to approach, read, and study the Bible as literature, with a focus on narrative (the predominant genre), poetry, and parable.

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

- Understand the origin and development of the Bible.
- Identify the major themes in the Bible.
- Understand how to read the Bible as literature.
- Identify and explain the elements of Biblical narrative.
- Write a paper explicating the literacy elements in a Biblical narrative, including the historical and cultural context of the narrative.
- Identify and explain poetical elements in a Biblical poetry passage.
- Recognize the literacy features of parable.

Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

ENG 243 Topics in Contemporary Literature

This course is a study of literature that has been produced in the past few decades. It may feature selected topics and/or themes from a variety of fiction, drama, and poetry.

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

- Identify various themes and techniques found in post-modern literature such as irony, pastiche, intertextuality, metafiction, temporal distortion, etc.
- Identify literature as the product of a particular cultural climate.
- Recognize the ways in which postmodern literature is a response to modern literature.
- Examine the use of literacy elements found in the reading selections.
- Compose critical essays that analyze the reading selections.

Prereq. ENG 112

3 Credits

3 Weekly Lecture Hours

ENG 245 Black American Literature

Black American Literature 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 will analyze the various genres, topics, mores and traditions identified with African Americans and 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(s) discussing the aforementioned topics

Prereq. ENG 100

3 Credits

3 Weekly Lecture Hours

ENG 247 African and Caribbean Literature

This is an introductory survey course in African and Caribbean literature. It exposes students to memoirs, biographical, and fictional works by and about people from the Caribbean and Africa.

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

- Identify writers from the Caribbean and Africa, and the vocabulary and themes in their work that speak to their unique role in world history.
- Assess the influence that the relationships between writers from the Caribbean, Africa and the United States had and has on world history.
- Understand and apply theories proposed by writers from the Caribbean and Africa about their situation in a postcolonial world.
- Complete a literature review about an influential event or individual in literature from the Caribbean or Africa.

Prereq. ENG 112

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

ENG 50 Developmental English

This course is intended to prepare students for college-level writing by using a multi-step approach and providing a comprehensive review of grammar. Students will move from paragraph to essay writing while developing basic research skills. Students will develop their critical thinking skills through reading and writing. Credits from the course are not applicable toward a degree.

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

- Demonstrate critical thinking and writing in various rhetorical situations.
- Demonstrate awareness of the rhetorical situation by making appropriate choices for a given writing task.
- Craft a thesis that can be supported with evidence in the body and conclusion.
- Demonstrate that writing is a process.
- Apply formal conventions of written American English with respect to grammar, mechanics, and punctuation.
- Provide critical assessment of college-appropriate texts.
- Synthesize basic research skills.

Prereqs. Placement testing determines the correct beginning course for each DCCC writing student. Many students place directly into ENG 050 upon entry into the College.

Students who are required to take REA 050: Developmental Reading must pass that course and ENG 050 before they are eligible for ENG 100.

ESL students must pass ESL 044: Intermediate Writing II before beginning ENG 050.

Preq: ENG 050, REA 050, ESL 044

3 Credits

3 Weekly Lecture Hours

(ESL) Eng as a Second Language

ESL 23 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 the present and past continuous, and the present perfect tenses.
- Understand and use yes/no and why questions.
- 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 24 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 simpler 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

2 Weekly Laboratory Hours

ESL 25 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.
- Skim and scan for information.
- Expand vocabulary.
- Use an English-English dictionary for ESL learners

Prereq. Placement Test

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

ESL 26 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).
- Understand simplified, extended narratives (e.g., lectures and dialogues).

Prereq. Placement Test

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

ESL 33 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:

- Use with accuracy the past perfect and future perfect verb tenses.
- Use with accuracy the present, past and future tenses in reported speech and conditional time (real and unreal).
- Apply accurately the passive, gerund and infinitive forms of verbs.
- Use models expressing possibility, ability and permissibility accurately.
- Produce adverb, noun and adjective clauses accurately.
- Use strategies to detect and correct grammatical errors.

Prereq. ESL 023

3 Credits

3 Weekly Lecture Hours

ESL 34 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:

- Write compound and complex sentences with correct capitalization and punctuation.
- Use perfect tenses, real conditionals, models, passive constructions, gerunds and infinitives.
- Use consistent verb tenses, pronouns and transitional connectors to link ideas.
- Use subordination to combine short sentences and to emphasize important ideas.
- Write short essays of 300 words using several well-supported paragraphs.
- Use description, narration, explanation and comparison.
- Generate and organize ideas using a number of pre-writing strategies.
- Take effective notes showing main ideas and important details.
- Demonstrate skill in revision and process writing in a portfolio of written work.

Prereq. ESL 024

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

ESL 35 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/Listening I (ESL 036). In addition, two hours of tutoring work 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 content 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 36 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.
- Identify 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 43 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 continuous 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 44 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 this 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 034

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

ESL 45 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 text that is written for native speakers. Students will normally take Intermediate Writing II (ESL 044) and Intermediate Speaking/Listening II (ESL 046) along with this course. In addition, two hours weekly of tutoring are required.

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

- Use a variety of reading strategies to interpret meaning.
- Summarize and paraphrase, verbally and in writing, information contained in the readings.
- Discuss the content of readings and defend answers.
- Expand vocabulary, knowledge of word forms and use of idiomatic expressions.
- Demonstrate knowledge of roots, prefixes and suffixes.
- Use an English-English dictionary for advanced ESL learners.

Prereq. ESL 035

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

ESL 46 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.

Prereq. ENG 050 and REA 050

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

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

3 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 Physical Geology

This course is designed for Geology and Natural Science majors program although it will be appropriate for non-science majors as a laboratory science elective. This course is designed as a laboratory course provides a study of the Earth, its composition, structure 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, and earthquakes.
- Compare surface water and groundwater, and explain the role of each in the human environment.
- Climate, glaciers, wind, and coastal processes.
- Geologic time and rock correlation.
- Describe the socioeconomic impact of geology.

Prereq. MAT 060 and REA 050

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

ESS 112 Historical Geology*Prereq. ESS 100 or 110***4 Credits****3 Weekly Lecture Hours
2 Weekly Laboratory Hours****(FRE) French****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.

*Prereq. 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.

*Prereq. FRE 111***3 Credits****3 Weekly Lecture Hours****(FST) Fire Science Technology****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 conflagration, 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 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 hoseline 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****FST 201 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 220 Seminar Fire Science

This course is designed for advanced students and presents a series of topics only occasionally encountered. Much of the material is supplemental to previous course work. Students are expected to present a research project to the class.

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

- Depict the specific extinguishing properties of water, foam, concentrates and inert gases.
- Explicate procedures involved in electrical fires.
- Detail the types and legal aspects of fire alarm systems.
- Provide guidelines for fire operations at high-rise emergencies.
- Plan effective and motivating ongoing training for fire personnel.
- Delineate appropriate administrative techniques of budgeting, record keeping and preplanning for diverse emergency situations.

3 Credits

3 Weekly Lecture Hours

(GER) German

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 culture from reading assignments.

Fewer than two yrs H.S. German

3 Credits

3 Weekly Lecture Hours

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.
- 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

(HIS) History

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.

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 Metternich, 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.

3 Credits

3 Weekly Lecture Hours

HIS 150 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 160 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 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 this 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.

Prereq. ENG 050 and REA 050

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 diplomacy 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 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 dictators, 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 politic.

3 Credits

3 Weekly Lecture Hours

HIS 224 History of the First World War

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 050, REA 050

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 this 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.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

HIS 251 History of Modern China

This course is an introductory study of the history of China from the seventeenth century to the present. Specifically, the course seeks to analyze how China has been able to build a dynamic and growing civilization amidst rebellion, reform, and revolution. Political, economic, and social issues will be discussed to gain a greater understanding and appreciation of Chinese civilization. Three major themes in the course will deal with imperialism, nationalism, and modernization. An effort will be made to understand the political, economic, and social "self-strengthening" experiments in China within a global perspective. The final portion of the course will examine contemporary Chinese society.

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

- Explain the conflict between traditional Chinese values and the introduction of Western ideas.
- Describe the major Chinese attempts to reconcile the cultural conflicts.
- Explain the importance of the following events in Chinese history: The Taiping Revolution, Opium Wars, Unequal Treaties, Boxer Rebellion, Nationalist Movement, World War I, World War II, Korean War and the Cultural Revolution. Analyze the emerging position of China with regard to its domestic and foreign policy.
- Gain a greater appreciation of the important role played by China in the modern world.
- Utilize a variety of source material to examine modern Chinese history.

Prereq. ENG 050 and REA 050

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 256 History of Modern Islam

A inquiry into the history of the Islam and the Middle East from the life of the Prophet Mohammed, through the cultural and political spread of Islamic peoples into Africa and Europe with the Caliphate, to the Islamic Renaissance of the Early Middle Ages, the Empires of the Ottomans, Safavids and Moguls and into the 20th century with the rise of oil and secular states. The course will complement existing courses on the religion of Islam to show the intersection of religion with political and cultural institutions as they spread from the core Islamic lands in the Arabian Peninsula to the broader 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.
- Note the spread of Islam and the rise of extensive scientific, artistic and cultural development with the Islamic Renaissance of the Early Middle Ages, which will begin the expansion of the growth and prosperity of Western Civilization.
- Examine the Middle East's role in energy production in the 20th century and how the beliefs of Islam inform economic policy in the emerging global economy.
- Draw distinctions and continuities through time with the ongoing battle between secularism and fundamentalism in the Islamic world.

Prereq. ENG 050 and REA 050

3 Credits**3 Weekly Lecture Hours**

(HRM) Hotel/Restaurant Manage

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.

Prereq. ENG 050, MAT 040 and REA 050

3 Credits**3 Weekly Lecture Hours**

HRM 110 Food Sanitation and Safety Supervision

This is a course for food handlers and especially for supervisors employed in the retail foodservice industry.

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

- Satisfactorily pass the food handlers examination administered by the college. Identify the causes of food-borne illness.

- Purchase, handle, store, prepare and serve food in accordance with generally accepted sanitation procedures.
- Maintain sanitary facilities and equipment.
- Prepare an Integrated Pest Management system, and develop and maintain an employee safe work environment.
- Apply federal, state and local regulations/laws specific to food-service procedures.
- Implement a self-inspect sanitation and safety program in a food-service operation.

Prereq. REA 050, ENG 050

3 Credits**3 Weekly Lecture Hours****3 Weekly Laboratory Hours**

HRM 140 Tourism: Principles, Practices, Philosophies

In this course the student will acquire adequate tourism vocabulary. Student will study the why and how of tourism as an important factor in the wealth of any nation. And in global terms, the course provides an overview of the principles, practices, and philosophies that affect the cultural, social, economic, psychological, and marketing aspects of the travel and tourism industry. Among the topics covered are: meetings and conventions, role of social media, basic tourism marketing principles including mobile/social media marketing. The student will study the history of travel, future prospects and problems in the industry, especially the need for sustainable economic development. The student will explore their personal philosophy of travel as a factor in life's enrichment and identify career opportunities in this vast industry.

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

- Appreciate the importance of tourism's economic contribution
- Understand consumer travel behavior
- Achieve a personal philosophy of travel as a factor in life's enrichment
- Understand basic tourism marketing principles and applicable technology
- Apply tourism supply/demand principles as the basic for policy and planning
- Distribution of destination services with emphasis on consumer orientation
- Study the tourism policy in the Delaware Valley region
- Identify possible career opportunities in this field

Prereqs. ENG 050, REA 050, MAT 040

3 Credits**3 Weekly Lecture Hours**

HRM 145 Sales and Marketing in Hospitality

In this course the student will learn to explain and apply the theory of successful hospitality marketing and sales. The topics of developing hospitality marketing and sales plans will be covered. The organization of the typical sales and marketing office within the corporate and individual property will be discussed. Various personal sales techniques such as suggestive selling and upselling in the hotel/restaurant reservation and direct patron contacts will be explained. Marketing to all segments of tourism including social, education, government, fraternal, recreation and non-profit will be presented.

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

- Distinguish marketing from sales.
- Identify trends that affect marketing and sales in the hospitality industry.
- Identify and describe the key steps of a hospitality marketing plan.
- Summarize the duties and responsibilities of staff and management positions typically found in a lodging property marketing and sales operation.
- Perform the five steps of a hospitality presentation sales cell.
- Explain effective telephone communication, email, technology (CRS) and special social media for room and foodservice reservations.

- Describe internal marketing and sales promotion.
- Explain the role of hospitality advertising, public relations, and publicity.
- Explain how lodging and foodservice/restaurant are meeting the current needs of business including meeting planners.
- Identify considerations for marketing hospitality products and services to international travelers and other special segments such as social, education, domestic tourists, sports teams, and government travelers.
- Summarize trends affecting the food and beverage industry, and describe positioning strategies and techniques for restaurant and beverage operations.
- Explain how hotels market and sell to conventions, catered events and trade shows.

Prereq HRM 100

3 Credits**3 Weekly Lecture Hours**

HRM 155 Managing Lodging Operations

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. Meaningful statistics and reports are examined. The inter-departmental roles including housekeeping, maintenance, security and other uniformed staff are discussed. The relationship between employees and guest, room design/layout and the future role of computers are presented.

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.

Prereq. HRM 100

3 Credits**3 Weekly Lecture Hours**

HRM 162 Laws of Innkeepers

This course is an applied approach to the legal responsibilities of the operational department heads in lodging properties and all areas of food service. Topics include room reservation contract law, torts, ADA requirements, Civil Rights legislation, tip credit reporting requirements, labor law, dram shop, PA Title 18, 47 and 36. All supervisors and department heads benefit from this practical approach to avoiding the legal problems in this industry.

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 165 Managing Hospitality Human Resources

This course is designed to provide students with a basic understanding of human resources in the hospitality industry including labor cost forecasting, recruitment, selection, assessment of job performance, compensation and incentive pay programs and benefit plans for both supervisors and hourly employees. Students will discuss the role of collective bargaining on the industry.

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

- Describe the Equal Employment Opportunity Commission (EEOC); distinguish between EEOC laws and affirmative action.
- Describe how the results of job analysis are used to job descriptions and job specifications.
- Explain and apply methods for forecasting labor demand, and identify the advantages and disadvantages of internal and external recruiting.
- Describe the importance of the selection process, and identify the types of selection errors and biases managers must overcome when interviewing job applicants.
- Explain the purpose of an orientation program.
- Identify and describe the stages of the training cycle, and explain how a training needs assessment is developed and conducted.
- Describe the functions of performance appraisals.
- Describe types of compensation, and outline the major influences on compensation plans.
- Outline the steps and identify options for establishing pay structures and identify the characteristics and advantages of effective incentive programs.
- Describe the impact of the various Civil Rights laws on the industry.
- Describe four general categories of employees' benefits and several factors to consider when developing benefit plans.
- Outline the reasons employees join unions.
- Identify mandatory, voluntary, and illegal collective bargaining issues.
- Describe how management should prepare for collective bargaining.
- Explain the purpose of the Occupational Safety and Health Act (OSHA), and describe the enforcement of OSHA standards and requirements.
- Describe the hospitality industry's turnover problem, demonstrates how to calculate turnover rates, and identify the costs, causes and impact of turnover.

Prereq. HRM 100

3 Credits

3 Weekly Lecture Hours

HRM 253 Restaurant 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.

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

- Apply organizational theory to the practical performance of management functions.
- Use internal operational controls.
- Plan and design a menu.
- Purchase, receive, store and issue food.
- Design and lay out the operational areas.
- Deliver prepared foods to consumers.
- Perform administrative tasks with regard to personnel.
- Promote and merchandise products and services of a food-service operation.

Prereq. HRM 100

3 Credits

3 Weekly Lecture Hours

HRM 254 Catering & Event Planning

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 a quantity food event.

Upon successful completion of this course, students 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 and cost a special event for a large event with meal

Prereq. HRM 100

3 Credits

3 Weekly Lecture Hours

HRM 255 Beverage Management

This is a course for those wishing to learn how to operate a beverage outlet and serve controlled beverages responsibly. This is not a bartending course. The course includes restaurant bar operations, hotel room beverage service, catering bar systems and beer distributors. The federal standards of identity under USCA 27 and Pennsylvania Law Title 47 and any appropriate criminal codes will be presented.

Upon successful completion of this course, the student should be able to:

- Make personal choices in career development and business decisions with regard to beverage management.
- Structure task performance within a beverage operation.
- Purchase, receive, store and issue beverages in accordance with generally accepted procedures.
- Properly use equipment, tools and terminology specific to beverage operations. Demonstrate the basic practices of mixology.
- Apply merchandising techniques within an overall marketing strategy of a beverage operation.
- Gather and apply information for internal control and operational decision making.
- Discuss third-party liability as affected by the environment of a beverage operation.
- Apply federal, state and local regulations/laws specific to beverage commerce.

Prereq. HRM 100

3 Credits

3 Weekly Lecture Hours

(HUM) Humanities

HUM 100 Introduction to Visual Arts

This course is designed to introduce students, through a broad overview, to the nature of art, the 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 110 Early Cultures to Renaissance Humanism and the Global Community of Today

This survey course introduces students to the cultural legacy of the global community. In a historical context, students will survey the literature and the visual and performing arts of various societies from their pre-historic creative endeavors to their achievements in the Renaissance. Students will examine the various social, cultural, and religious institutions that emerged as men and women around the world struggled to cope with their environments. Basic theories, methods and practices of archaeology are introduced to assist students in their understanding of the early human experience.

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

- Understand the artistic, social, cultural and religious achievements of the first civilizations.
- Explain the historical and aesthetic development of various cultural patterns from pre-history to the Renaissance.
- Articulate the contributions of diverse peoples to literature, government, religion, visual and performing arts.
- Articulate the major aesthetic principles of poetry, prose, painting, music, architecture and sculpture within this time period.
- Trace the influences of these earlier cultures on the present day global community.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

HUM 120 The Baroque to the Post-Modern and the Global Community of Today

This course continues the survey begun in HUM 110 of the cultural legacy of the global community. In an historical context, students will survey the literature and the visual and performing arts of various societies from the Baroque (17th century) to the Post-Modern (21st century) period. Students will also examine the impact of science and technology, as well as the social and cultural realities in this period.

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

- Understand the artistic, social, cultural and religious achievements from the Baroque to the 21st century.
- Explain the historical and aesthetic development of various cultural patterns from the Baroque to the 21st century.
- Articulate the contributions of diverse peoples to literature, science, religion, visual and performing arts, and modern technology.
- Articulate the major aesthetic principles of poetry, prose, painting, music, architecture and sculpture within this time period.
- Trace the influences of these more recent cultures on the present day global

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

HUM 141 Film Language

This course is intended to engage students in analysis 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:

- Identify types of films.
- Recognize stages in film history.
- Identify 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 five 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 050 and REA 050

3 Credits

3 Weekly Lecture Hours

HUM 162 Islam

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 Sufism.

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

- Improve their reading comprehensive 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
- Describe the most important rituals and tenets of Islam

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

HUM 163 Theology and Popular Culture

This course covers ways to identify theological elements in society, evaluate them critically, and determine the extent to which they inform our individual spiritually. 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.

Upon 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 167 Introduction to Judaism

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, Sefardic, Karaites, Chasidut), symbols, and sacred places.

Upon 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

3 Credits

3 Weekly Lecture Hours

HUM 168 Buddhism

This class is an in-depth analysis of the historical, philosophical, religious and ethical foundations of Buddhism, including the life of Gautama Siddhartha, the three major branches of Buddhism (i.e. Theravada, Mahayana and Vajrayana) and Buddhism in the West. Some basic meditation instruction will be included in the course.

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

- Conduct college-level research-traditional and online on the critical aspects of Buddhism
- Understand the relationship between Buddhism and other religious traditions
- Describe the essential aspects of Buddhist philosophy at the college level
- Understand the historical development of Buddhism
- Develop an informed approach to Buddhist culture and religion

Prereqs. ENG 100, HUM 160 recommended

Prereq. ENG 050 and REA 050

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.

Upon 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.
- Trace the myths implicit in the surviving rituals of the Eastern peoples.
- Comment on the different aspects of myths as shown in selected fine and performing arts.
- Demonstrate the relevance of the ancient concepts to modern times and to the students' own lives.

Prereq. ENG 112

3 Credits

3 Weekly Lecture Hours

HUM 180 Aspiration and Dissonance: A Global Interdisciplinary Study of History, Literature and Religion

This course considers the persistent separation between humanity's greatest ideals (defined as our "aspirations") and the reality of history (defined as "dissonance") through selected historical, literary, and mystical works from all over the world.

This inter-disciplinary, co-taught course is designed to make the student think about the purpose and value of these aspirations, the skepticism that results from their enduring failure, and the changes that a global education may bring to this situation.

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

- Students will be able to represent the diversity of human responses to common phenomena from a global perspective
- Students will be able to demonstrate critical and analytical thinking using historical, literary and religious texts
- Students will be able to articulate the global and interdisciplinary nature of knowledge in oral and written form
- Students will be able to demonstrate a capacity to analyze human experiences through historical, literary and religious methodologies

Prereq. ENG 050, REA 050

3 Credits

3 Weekly Lecture Hours

HUM 205 Latin American 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:

- 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 culture
- Recommended Course: Latino-American History (HIS 253)

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

HUM 221 Intro to LGBTQI Studies

This course will develop a framework for understanding the history, socio-cultural, legal and political aspects of LGBTQI people and communities. The course will explore topics such as the changing social structures in regards to homosexuality, gender transgression, and LGBTQI people and communities. The history of LGBTQI movements in the United States and internationally will be addressed, as well as, the intersectionality of identities such as how race and ethnicity, class, gender and spirituality intersect with LGBTQI people and communities. Throughout the course students will be exposed to the development of LGBTQI and Ally communities, and the people and communities who influenced and lead movements related to LGBTQI and Ally studies across a variety of disciplines.

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

- Understand and recognize how historical, cultural and social-political contexts have particular relevance to LGBTQI people and communities
- Increase understanding of the impact that homophobia, homonegativity, heterosexism, transphobia, transnegativity, sexism and cisgenderism have on LGBTQI individuals
- Become familiar with queer theory and queer identities
- Understanding the multifaceted issues facing specific populations of LGBTQI people, including women, ethnic and racial minorities, youth, people living with HIV-AIDS, veterans-military status, individuals with disabilities and older adults
- Understand the need for affirmative spaces for LGBTQI people, and the knowledge and skills to begin creating and supporting those spaces that currently exist
- Identify and examine personal issues that may influence their students ability to function as a supportive ally to LGBTQI people
- Increase their students' awareness of and access to local and national resources available to assist in their students' development throughout the course, as well as with their student's future studies and work with LGBTQI individuals.

Prereq. ENG 050, REA 050

3 Credits

3 Weekly Lecture Hours

HUM 290 The Art and Architecture of Renaissance Florence

In a hands on holistic approach to learning, students will have the opportunity to study the Renaissance as it flowered 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 Renais-

sance art will begin with an over-view of the ideas and ideals of the classical world and end with the transition to Mannerism. 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:

- Understand the importance of the archaeological finds of Fiesole's Roman Temple Roman theater, and Roman baths.
- Understand the struggle between the two political parties, the Guelphs and the Ghibellines, and their impact on Florence and Siena.
- Explain the evolution of the guild system and its power in Florentine politics
- Explain the concept of patronage as it was expressed through the Catholic Church
- Recognize the elements of visual art associated with the following terms: Hellenistic, Byzantine, and Romanesque.
- Define the following: classical, humanism, symmetry, balance, harmony, order, monumental.
- Understand the importance of the precursors of the Renaissance: Cimabue, Sts. Dominic and Francis, Nicola and Giovanni Pisano, Duccio di Buoninsegna, Dante Alighiere, Giotto, Martini, Lorenzetti, Orcagna, and Andrea da Firenze.
- Understand the geographical and political framework of Italian city-states and their competitiveness
- Explain the 'castato' 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 100

3 Credits

3 Weekly Lecture Hours

(HUS) Human Services

HUS 101 Introduction to Social Work and 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

HUS 201 Domestic Violence

This course is a one semester overview of the complexities underlying domestic violence in America, with a particular focus on Pennsylvania. Experts define domestic violence as behavioral patterns that are purposeful, often violent and used to maintain power and control over an intimate partner. Students will examine the historic and cultural context and expanded definition of domestic violence along with the current best practices to prevent and eliminate this problem. This course is designed to enhance the knowledge of students interested in the field of human services as they critically evaluate the complex overlapping of family dynamics, work place concerns and other social problems with the impact of physical, sexual, emotional, economic and psychological abuse. Special attention will be paid to the current best practices designed to assist children, individuals, families and communities with the goals of safety and self-determination.

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

- Define domestic violence, the cycle of violence and related concepts
- Identify and explain the roles of the perpetrator, victim and bystander
- Describe the support/benefits and limitations of the current legal and police responses to domestic violence incidents
- Identify governmental and social service agencies available to assist victims, perpetrators and bystanders
- Describe the structure, content and limitations of a professional helping relationship
- Identify local agencies and models of strength-based interventions and treatment practices
- Demonstrate how knowledge of oppression, privilege, 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
- Evaluate the ethical dilemmas surrounding the concept of self-determination and mandated-treatment as these relate to people who experience domestic violence
- Identify the emotional and physical symptoms and causes of professional burnout along with the methods designed to prevent it

Prereq. ENG 100, PSY 140

3 Credits

3 Weekly Lecture Hours

(HVA) Heating Ventilation & AC

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 Hour
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 refrigerator system via process adapters, tap 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 Hour
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.

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

- Explain heat flow, change-of-state condensing point, evaporation point and laws of refrigeration.
- Describe the types of commercial refrigeration systems and identify integral components.
- Cite common problems with expansion valves, pressure reducing valves, pressure switches, filters and dryers.
- Adjust the superheat and sub cooling of a refrigeration machine for maximum efficiency.
- Depict a psychrometric chart and understand its use in air conditioning.
- Measure air flow and discuss common problems associated with air side residential and commercial air conditioning.

Prereq. HVA 101

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

HVA 104 Practical Problems in Mathematics for HVAC&R Technicians

This course introduces basic mathematics for the HVAC&R student. The course includes whole and mixed numbers, fractions, decimals, ratio and proportions, basic trigonometry and Ohm's law of electrical relationships. It covers direct and computed measure and presents the use of standard formulas, graphs and graphing. Theories tested with problems that are directly related to the HVAC industry. The course is designed to remediate students with mathematics concepts and prepare them for traditional college level math courses. Emphasis will be placed on real practical applications.

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

- Solve problems using ratio and proportion.
- Calculate answers using standard HVAC&R formulas.
- Solve triangles using trigonometric ratios and the law of sines and cosines.
- Construct graphs from raw data and also interpret graphs.
- Solve applied HVA problems applying the competencies above.

3 Credits

3 Weekly Lecture Hours

HVA 106 Basic Piping for Contractors

This course is an introduction to piping principles and practices as they apply to Heating, Ventilating, Air Conditioning, and Refrigeration. The course utilizes a variety of pipes, pipe materials, and fittings in the instruction of proper method of joining pipe, making tools and material lists, measuring, and assembly of manifolds. The students will develop the skills needed to work with drawings and testing procedures.

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

- Identify various pipes and fittings
- Read, interpret, and correctly apply information contained in drawings
- Perform accurate measurements
- Tap pipe and install a water line
- Braze and solder pipe
- Install valves
- Fabricate grooved pipe
- Perform piping processes (Cutting, reaming, threading, etc.)
- Air and water test piping assemblies
- Demonstrate team working skills

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

HVA 107 Gas Heating

This course is designed to provide the relevant theory and skill to remove and install gas or oil heating systems. The topics of instruction will include but will not be limited to the basic system sizing selection of equipment recognizing the venting requirements for a new installation. Steps to follow for the safe removal of existing equipment will be discussed. Restate an understanding of NFPA 54 the NEC codes and the manufacturers installation instructions. Provides knowledge to perform basic electric wiring for the installation of heating equipment and how ductwork is assembled for hot air systems, the piping schematics, and components for hot water systems will also be presented.

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

- Perform a startup and check operation of the equipment. Understand basic heat loss calculation.
- Restate the two types of warm air systems.
- Recognize an up flow, and counter flow heater.
- Recognize operating and safety controls. Identify the function of each operating and safety control.
- Calculate air combustion. Calculate gas pipes. Identify NFPA guidelines for venting gas.

3 Credits

3 Weekly Lecture Hours

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 includes, but is not limited to, 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.
- Determine total weight of metal needed for duct.
- Utilize an installation take-off form.
- Identify costing 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.
- Apply external duct insulation.
- 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.
- Identify NFPA-58 guidelines for venting propane/LP-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.

Prereq. HVA 100, HVA 200, MAT 110

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory 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.
- Identify various heat distribution systems.
- Cite the different piping designs of hydronic heating systems.
- Cite the sequence of operation of a gas or oil fired hot water boiler.

- Cite the sequence of operation of a hydronic heating system.
- Service and replace hot water boilers.
- Service mechanical controls of a hydronic heating system.
- Identify and install appropriate venting.
- Analyze combustion procedures.

Prereq. HVA 112

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory 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 safety, duct take-off, 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.
- Identify NFPA-58 guidelines for venting propane/LP gas fired appliances.

Prereq. HVA 108

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

HVA 112 Oil Burners and Hydronic Steam Heating

This course is an introduction to oil burners and hydronic steam heating. The course covers the history of oil burners and their technological growth to present day in residential and light commercial appliances. Also discussed are petroleum crude, refinement, and distillation into light grade fuel oil. This course also covers techniques in designing and building of steam heating systems.

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

- Explain the differences in fuel oil grades.
- Explain the principles of oil burner combustion.
- Describe fuel pump operation.
- Explain the functions of safety and operating controls; their purpose and operation.
- Identify the sequences of operation of an oil burner as related to hydronic steam boilers.
- Identify the venting process of oil-fired appliances.
- Service oil burners.
- Identify methods of heat transfer.
- Cite the principles of steam generation.
- Describe one and two pipe steam distribution systems.
- Explain the importance and operation of the Hartford Loop.
- Service steam boilers.

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

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:

- 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.

Prereq. 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.

Prereq. HVA 100

2 Credits

**1 Weekly Lecture Hour
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.
- Describe the Montreal protocol and the regulations established by the international community concerning refrigerants.
- Explain the U.S. Clean Air Act and the limits and prohibition of CFCs and HCFCs.
- Handle refrigerants in accordance with new procedures.
- Set up record keeping and documentation for refrigerant management programs.

- State the use and operation of recover, recycle and reclaim equipment.
- Service refrigeration and air conditioning without venting refrigerant into the atmosphere.

Prereq. HVA 103

2 Credits

**1 Weekly Lecture Hour
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:

- Explain principles of combustion.
- 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 Hour
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 Hour
2 Weekly Laboratory Hours**

HVA 204 Blueprint Reading for HVAC

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.
- Identify appropriate types of reference sources and use them effectively.
- Prepare for advanced studies in architectural construction fields.

Prereq. HVA 104

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

HVA 206 Industrial Piping

This course provides a logical succession for the topics covered in HVA 106. In essence, this course introduces the student to additional varieties of pipe materials, pipe connectors and systems used as conductors for various materials within varied industrial facilities. Instruction will be given in the selection, installation and proper use of the different types of materials available as industrial piping. General shop safety and health, accident protection practices and procedures and OSHA/EPA requirements for the proper use of tools, ladders and hi-bay lifts for the installation, repair and replacement of piping system components will also be addressed.

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

- Utilize appropriate terminology for the description of piping systems, components, devices and tools and for installation and repair.
- Calculate costs and savings associated with varied types of piping systems.
- Identify, select and install proper pipe for various applications, including cast-iron, copper, PVC and other plastics/composites, stainless and other alloy steels.
- Investigate the correct use of water pipes (1/2" 3" in diameter) and effect field or shop installations or repairs.
- Determine the correct application size and pressure rating for Wirsboro (PRO-PEX), Victaulic and LOKRING piping materials and devices.
- Install, repair and list types of pipe and fittings with the appropriate tools.
- Prepare job plans for the installation and repair of various piping systems.
- Apply safety/health/accident protection practices and procedures for inspection/installation/repair of various piping systems.
- Employ proper methods for cutting steel, cast-iron, various plastics and stainless steel pipes and tubing.
- Prepare and install stainless steel pipe and fittings for food processing and pharmaceutical applications.
- Select a type of piping material with regard for application and system pressure.
- Utilize a T-Drill System for pipe installation and/or repair.

Prereq. HVA 106, TME 115

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

(IMM) Interactive Multimedia

IMM 100 Interface Design and Rapid-Prototyping

Design and create interfaces from a human-centered, activity-based approach. Students learn to evaluate and analyze user interface requirements, follow an interactive design model, and develop highly usable and aesthetically pleasing real-world applications. Using rapid-prototyping tools students will develop interactive prototypes for websites and applications that employ interface design standards.

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

- Why the user interface is a critical component of computer-based training (CBT) and Web programs
- The goal of human-computer interaction
- To analyze and evaluate user interface requirements
- To use an interactive design process model
- To design applications employing user-centered design techniques
- To identify solutions to real world, instructional design problems
- How to use color effectively in its relationship to layout and design
- To identify and apply the principles of gestalt theory to visual screen design
- To use graphics and animation tools
- To compare and contrast digital image types: vectors and bitmaps

- To use rapid-prototyping tools to develop user interfaces that utilize interface design standards

Prereq. DPR 100 or DPR 108 or equivalent computer experience

3 Credits

3 Weekly Lecture Hours

IMM 110 Multimedia Graphics & Design

This course provides an introduction to multimedia, the Internet, the multimedia design and development process, the principles of design, and an in-depth exploration of digital imaging. Students learn to utilize Adobe Photoshop to create and edit professional-looking graphics for use in multimedia and web applications.

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

- Define multimedia and identify its components.
- Demonstrate a fundamental knowledge of the Internet.
- Examine the ADDIE model for developing effective multimedia programs and web sites.
- Identify the latest multimedia/Internet hardware and software requirements.
- Determine how and where multimedia and Internet technologies are used in society.
- Use digital technologies to capture images.
- Apply the principles of design such as color and layout.
- Use Adobe Photoshop to retouch images and create graphics for incorporation into a multimedia program.
- Demonstrate the use of Photoshop tools such as panels, selection and painting tools, filters, opacity and layer style settings, and blending modes.
- Demonstrate the ability to use Photoshop to create graphics for use in multimedia and Web applications.

Prereq. DPR 100 or DPR 108

3 Credits

3 Weekly Lecture Hours

IMM 120 Web Page Development

This course introduces students to publishing on the World Wide Web (WWW) using HTML, XHTML, and Adobe Dreamweaver. Students gain hands-on experience in creating Web pages that include text images sound, video, animation and basic JavaScript. Concepts, features and the history of the WWW are also included.

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

- Describe the history of the Internet and World Wide Web as a communication and marketing tool.
- Identify the hardware, software, and networked environment necessary to support the development and maintenance of a Web site.
- Use basic HTML tags to create Web pages.
- Demonstrate the ability to manipulate images for inclusion in Web pages.
- Use HTML tags to add multimedia elements to Web pages.
- Use HTML tags to create Web pages that include links, lists, forms, tables, and frames.
- Describe how CGI is used in the development of Web pages.
- Use basic JavaScript to add interactivity to Web pages.
- Use CSS (Cascading Style Sheets) to format Web pages.
- Demonstrate a working knowledge of HTML, XHTML, & XML.
- Use Adobe Dreamweaver to design and develop Web pages.

Prereq. DPR 100 or DPR 108

3 Credits

3 Weekly Lecture Hours

IMM 122 Programming 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 a 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

IMM 201 Audio & Video for Multimedia

This course provides students with the skills needed to create and edit digital audio and video. There is an emphasis on planning, copyright, workflow, digital capture, editing and delivery alternatives. Students learn to utilize audio and software to deliver professional audio and video for use in multimedia and web programs.

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

- Research and evaluate legal issues involving for audio and video production.
- Identify equipment specifications for audio and video production.
- Demonstrate proficiency in audio and video planning and acquisition.
- Demonstrate the use of audio software to record and edit sound/music/voice.
- Demonstrate the ability to capture analog and digital video.
- Demonstrate the use of video software to record and edit digital video.
- Demonstrate proficiency in audio and video output and dissemination.
- Demonstrate how audio and video can be integrated with other elements such as texts, graphics, and animation for use in multimedia and web programs.
- Create and package a multimedia project that incorporate audio and video.

Prereq. DPR 100 or DPR 108

3 Credits

3 Weekly Lecture Hours

IMM 202 Multimedia Authoring

This course focuses on effectively communicating multimedia content in an interactive format. Students utilize integrated software applications to produce and edit multimedia elements such as photographs, audio clips, and video segments for inclusion in a project. Students work in a team environment to design, develop and deploy original, interactive multimedia projects using authoring tools in a deadline-driven setting for a client.

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

- Organize and plan multimedia content for an interactive format.
- Apply knowledge of copyright laws and their application to multimedia elements.
- Utilize multimedia applications to produce and edit text, graphics, audio, video, and animation.
- Develop interactive multimedia projects using authoring tools.
- Test the interactive multimedia project and evaluate the results.
- Package the finished interactive multimedia project for deployment.
- Present the finished interactive multimedia project to the client.

Prereq. IMM 201

3 Credits

3 Weekly Lecture Hours

IMM 205 Flash

This course is designed to introduce students to the development of interactive multimedia applications using Adobe Flash. Flash is the leading Internet technology for creating and viewing multimedia rich content on the web. Students develop projects using Flash's drawings, animation, audio and video tools. Using Code Snippets and ActionScript, students will learn to add interactivity to projects. Various methods of delivering Flash content such as a web display with HTML 5 and JavaScript, Adobe Air and Flash Player will also be covered.

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

- Use Flash to produce frame-by-frame, tween, shape tween, and bone animations.
- Add audio and video elements to Flash projects.
- Create and modify simple and complex graphics.
- Identify strengths and limitations of Flash Player, Adobe Air and HTML/JavaScript delivery.
- Use ActionScript and Code Snippets to create interactive projects.
- Publish and deliver content for different modes of playback.

Prereq. DPR 100

3 Credits

3 Weekly Lecture Hours

IMM 250 Portfolio Development

The focus of the Digital Portfolio course is to design an electronic portfolio that makes evident a student's knowledge and skills of multimedia and Web development applications. 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 digital 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 digital portfolio provides the ability to show work on demand and evidence of their preparation for a multimedia and Web development career.

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 media design and production work in a graduation portfolio.

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

- Identify the need for a digital portfolio.
- Identify the target audience of a digital portfolio.
- Demonstrate the ability to organize, collect and prepare material for a digital portfolio.
- Define copyright laws for multimedia and Web development.
- Demonstrate the ability to design a user interface for a digital portfolio.
- Demonstrate the use of multimedia and Web software tools to develop a digital portfolio.

Prereq. IMM 100 or IMM 205 and IMM 120

3 Credits

3 Weekly Lecture Hours

(INT) Interdisciplinary**INT 100 Student Success**

Student Success provides an opportunity for students to learn and adopt methods to promote their success in college. The course assists students in establishing educational objectives and increases success in achieving them. Included are the skills, behaviors and attitudes associated with success.

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

- Examine and develop power processes to produce greater responsibility, creativity, awareness, success and satisfaction in college.
- List and experiment with specific methods to improve study skills.

- Describe and utilize various models to enhance and facilitate communication.
- Apply decision-making skills to issues typically faced by college students.
- Identify, locate and utilize resources on campus and in the community that can assist in solving a variety of academic and personal problems.
- Implement an effective management style to improve organization, coordination and use of time.
- Explore and utilize processes that enhance getting along with faculty, students and others.

Prereq. REA 015, ENG 015 or pass test

3 Credits

3 Weekly Lecture Hours

INT 75 Eng & Reading 050

This class combines Reading 050 and Reading 050. It includes a comprehensive review and writing practice in the fundamentals of English grammar, word choice, punctuation, and paragraph construction. It is designed for students who need to improve their ability to understand and retain the materials they read in college. Emphasis will be placed upon reading comprehension, language clues, structural clues, critical thinking, and strategic reading. Credits from the course are not applicable toward a degree.

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

- Writes a paragraph of substantial length.
- Identify a sufficiently limited topic.
- Provides a topic sentence containing an appropriately limited subject and controlling idea.
- Demonstrates clear awareness of purpose by using an applicable paragraph pattern.
- Integrates a body of relevant and specific details with a consistent point of view, effective transactions, and a concluding sentence-all elements working to keep the paragraph clearly focused on the topic.
- Applies 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.
- Employs a range of sentence variety relevant to audience and purpose.
- Understands that writing is a process and is able to identify and use steps in the process to produce successful paragraphs.
- Recognizes the multi-paragraph essay format and understands its similarities to single paragraph writing.
- Demonstrates proficiency in reading comprehension skills.
- Identify and uses language and structural clues as an aid to comprehension in reading materials.
- Demonstrates critical thinking through writing.
- Demonstrates strategic reading in a variety of materials.

Please note students must be eligible for both REA 050 and ENG 050 to place into this course.

Prereq. REA 030, ENG 025 or ESL 045, ESL 044 and 043.

4 Credits

4 Weekly Lecture Hours

(IST) Industrial Systems**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 for 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 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 cogged 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 gear 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 various types of chain 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 lock-out 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.

Prereq. IST 100 Coreq. TME 115

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory 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 types, 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.

Prereq. 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. TME 115, MAT 110, PHY 100

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

(ITA) Italian

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.

3 Credits

3 Weekly Lecture Hours

ITA 102 Elementary Italian II

A continuation of Elementary Italian I 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 familiar prose aloud in a manner acceptable to the fluent speaker.
- Carry out familiar requests made in Italian.

- Demonstrate increased command of vocabulary and elements of grammar.
- Express briefly ideas on a given topic when guidance is offered.
- Recall familiar facts of Italian and European civilizations from reading assignments.

Prereq. ITA 101 or two yrs H.S. Italian

3 Credits

3 Weekly Lecture Hours

(MAT) Mathematics

MAT 100 Intermediate Algebra

This course is designed primarily as a preparatory course for students intending to take the College Algebra or Business Precalculus. 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 equations, 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.

Prereq. MAT 060

3 Credits

3 Weekly Lecture Hours

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.

Prereq. MAT 060

4 Credits

4 Weekly Lecture Hours

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 and exponentials.
- Solve applied problems involving the competencies above.

Prereq. MAT 110

4 Credits

4 Weekly Lecture Hours

MAT 120 Modern College Mathematics

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.

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.
- Plus, 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.

Prereq. MAT 060

3 Credits

3 Weekly Lecture Hours

MAT 121 Introduction to Probability and Statistics

This course provides a solid introduction to probability theory and its applications as well as the visual and mathematical analysis of data and data distributions. This course is similar to Modern College Mathematics I (MAT 120) in design and can be used as mathematics elective for students who are not science, engineering, or mathematics majors. 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 the fundamental counting principle, permutations and combinations.
- Use the definitions, axioms, and theorems of probability to solve problems.
- Use statistical measures, graphs, and normality to organize, describe, visually represent, and analyze data.
- Solve problems involving the simple linear regression line model and the correlation coefficient.
- Use a software package to solve problems in the competencies covered.

Prereq. MAT 060 or satisfactory score on Mathematics test

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 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 foot, 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 151 College Algebra

This course is intended primarily for those students who are majoring in science, engineering, or mathematics. Together with Precalculus, it prepares students for Calculus I. Topics covered include solving equations (linear, quadratic, radical, polynomial, rational, and absolute value), solving inequalities (linear, polynomial, rational, and absolute value), operations in the Rectangular Coordinate System and the Complex Number System, basic function operations (domain, range, graphing, arithmetic, composition and inverses), and

functions (linear, quadratic, polynomial, rational, exponential and logarithmic).

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

- Perform operations in the Complex Number System
- Solve equations and inequalities
- Perform operations in the Rectangle Coordinate System
- Define, evaluate, perform operations and graph functions
- Analyze polynomial functions
- Analyze rational functions
- Analyze exponential and logarithmic functions

Prereq. MAT 100

4 Credits

4 Weekly Lecture Hours

MAT 152 Precalculus

This course is intended primarily for those students who are majoring in science, engineering, or mathematics. Together with College Algebra, it prepares students for Calculus I. Topics covered include trigonometric functions, analytic trigonometry, triangle applications of trigonometric functions, analytic geometry, systems of equations, and sequences and series.

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

- Analyze trigonometric functions
- Apply analytic trigonometry
- Use trigonometric functions to solve applied problems
- Apply analytic geometry
- Solve systems of equations
- Analyze sequences and series

Prereq. MAT 151

4 Credits

4 Weekly Lecture Hours

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.

Prereqs. MAT 141, MAT 150 or MAT 152

5 Credits

5 Weekly Lecture Hours

MAT 161 Calculus II

This course is a continuation of Calculus I. It includes transcendental 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.
- Perform vector arithmetic in two space and three space.
- Determine whether a set with the operations of addition and scalar multiplication forms a vector space.
- Determine a basis for a vector space.
- Use linear transformations to map vectors from one vector space into another.
- Find the eigenvalues of a matrix.
- Apply linear algebra to the solution of problems in mathematics.

Prereq. MAT 161

3 Credits

3 Weekly Lecture Hours

MAT 210 Statistics

This course is designed to give students a tool as well as a language in which they can better understand and analyze the data with which they work and make decisions based on their analyses. It will employ algebra in deriving measures of central tendency and variability for various discrete and continuous distributions and will include the study of the following additional topics: descriptive statistics, inferential statistics, The Central Limit Theorem, the Normal Distribution and its applications, sampling distributions, hypotheses testing, interval and point estimations of population parameters, the Chi-square test with contingency tables, linear correlation and regression, analysis of variance, non-parametric statistics, and applications of statistics in various disciplines.

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

- Recognize the role of statistics in critical thinking and its applications using descriptive and inferential statistics.
- Use statistical measures of central tendency and statistical measures of variability to describe, represent and analyze data.
- Solve problems with bivariate data using scatter diagrams, correlation, and Least-Squares Regression. Solve problems involving the Normal Probability Distribution.
- Solve problems involving sampling distributions.
- Solve problems in statistical inference concerned with confidence intervals, minimum sample size determination, goodness of fit tests, and tests for independence and homogeneity.
- Test hypotheses for one, two, and three or more samples.
- Compute and interpret nonparametric tests.
- Use a software package to solve problems in the competencies covered.

Prereq. MAT 121 or higher

3 Credits

3 Weekly Lecture Hours

MAT 230 Foundations of Discrete Mathematics

This course is designed to introduce students to the concepts involved in mathematical proofs. Topics covered include the use of logic, quantifiers, set theory, relations and functions, and proof techniques and applications. This course is intended for mathematics and some computer science majors.

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

- Use the basic concepts of symbolic logic.
- Work with quantifiers.
- Apply the basic principles of set theory.
- Recognize and use valid proof techniques.
- Recognize and use the properties of relations and functions.
- Apply proof techniques.

Prereq. MAT 161 (grade C or better)

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 derivation of functions of two or more variables.
- Use partial differentiation to solve applied problems.
- Evaluate multiple integrals.
- Use multiple integrals 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) Business Math

MAT 40 Basic Mathematics

This course is designed for students who wish to strengthen their arithmetic and basic algebra skills. Topics include whole numbers, fractions and mixed numbers, decimals, ratio and proportion, percent and basic algebra. This course is a prerequisite for Business Mathematics and is useful as a preparation for Developmental Mathematics. This course is offered using either an individualized instruction approach or a classroom lecture approach.

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.

Satisfactory score on Mathematics placement test

3 Credits

3 Weekly Lecture Hours

MAT 60 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 variable
- Factor polynomials
- Solve a system of linear equations in two variables

Satisfactory score on the mathematics placement test

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

(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.
- Delineate 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.
- Demonstrate techniques used to subdue persons using locks, grips, holds, etc.
- Describe stress-inducing situations that can affect the conduct of individual police officers.
- Depict police leadership traits and techniques.
- Analyze psychological barriers to confrontation by police of their own emotional and psychological problems.
- Describe the effect on an officer's emotional state when exercising police power and authority.
- Demonstrate physical conditioning by performing push-ups, sit-ups, and a mile and one-half run, weight-lifting and sit-and-reach exercises.

4 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory 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.

Prereq. 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:

- Apply appropriate provisions of the Motor Vehicle Code to specific factual situations.
- Demonstrate procedures for breath, urine and/or chemical tests to determine the presence of alcohol or controlled substances.
- Differentiate applicable provisions of the Pennsylvania Motor Vehicle Code and the Criminal Code.
- Detail the role of PennDOT and traffic safety enforcement.
- Cite provisions of the Motor Vehicle Code for issuing citations and arresting individuals for code violations.

2 Credits

**1 Weekly Lecture Hour
1 Weekly Laboratory Hour**

MPT 105 Motor Vehicle Collision Inspection and Related Issues

This course is designed to develop an understanding of the relationship of the cause and analysis of vehicle collisions. Proper identification and documentation of physical evidence as it relates to collisions upon the highway, as well as collision scene, traffic direction and control will also be addressed.

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

- Define reportable and non-reportable, traffic and non-traffic motor vehicle collisions.
- Perform the proper sequence of action at collision scene.
- Recognize appropriate legal requirements pertaining to the need to complete state traffic collision reports.
- Utilize proper search technique for physical evidence at collision scene.
- Specify proper method for measuring skid marks based on type and extent of skid.

- Identify the term hazardous materials.
- Define why hazardous materials are a problem and who has to deal with them.
- Apply PennDOT basic safety guidelines.

1 Credit

1 Weekly Lecture Hour

MPT 106 Patrol Procedures and Operations

This course presents the principles of police patrol procedures and operations as the foundation at any police department. It introduces the student to the mental preparation necessary to effectively perform duties and function as a patrol officer.

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

- Apply standard accepted principles of police patrol.
- Detail incident procedures for vehicular accidents and violations as well as apprehension of suspects.
- Specify arrest, impounding, and security procedures applicable to patrol activities.
- Define human relations skills applicable to patrol procedures.
- Delineate Miranda warnings requirements.
- Identify purposes and procedures for safe roadblocks.
- Identify markings and colors common to gangs in Pennsylvania.

3 Credits

**2 Weekly Lecture Hours
1 Weekly Laboratory Hours**

MPT 107 Principles of Criminal Investigation

This course is designed to present basic principles of criminal procedures. It defines the role of a responding officer at the scene of a police event as well as, demonstrates the technical capacity to effectively conduct crime scene management preliminary investigations and other patrol-related investigations.

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.

3 Credits

3 Weekly Lecture Hours

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.

2 Credits

2 Weekly Lecture Hours

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 force 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.
- Define elements of the Domestic Violence Act.

2 Credits

2 Weekly Lecture Hours

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.

3 Credits

2 Weekly Lecture Hours

1 Weekly Laboratory Hours

MPT 205 Operation of Patrol Vehicles

This course is designed to teach the skills necessary for safe operation of police vehicles. Students will be well-versed in the control and handling of an emergency response vehicle. Mastery of the principles of safe driving coupled with refinement in driving skills under adverse and simulated emergency conditions will sharpen the students driving reactions.

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

- Operate police vehicles under normal and emergency circumstances.
- Describe and analyze an officers responsibilities for civil and/or criminal penalty in case of police vehicle accident.
- Demonstrate skills for safe driving and pursuit of fleeing individuals or vehicles.
- Detail proper vehicle protection systems.

2 Credits

1 Weekly Lecture Hour

1 Weekly Laboratory Hours

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 characteristics 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.
- Demonstrate public communication as a police officer through prepared speeches, testimony, and extemporaneous talks.
- 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.

2 Credits

2 Weekly Lecture Hours

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 distraught 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.
- Apply proper procedures to conduct field search of arrested persons.
- Identify proper procedure to handcuff suspects or prisoners.

1 Credit

1 Weekly Lecture Hour

(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 decipher 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 view drawings will be addressed. Piece-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 MAT course

4 Credits

3 Weekly Lecture Hours

1 Weekly Laboratory Hours

MTT 111 Introduction to Manufacturing

This course provides an introduction to the field of manufacturing/machining. The course is designed to provide instruction in the commonalities of theory and skills associated with various branches of the manufacturing industry. An overview of departments, engineering design, job planning, process documents, manufacturing support team responsibilities, as well as production workforce member's duties and responsibilities will be discussed. Shop floor etiquette, workplace cleanliness, safety and health, common powered and non-powered hand tools will be covered. Machine tool operations involving cut-off and contour metal cutting saws, drilling machines, offhand grinding of High-Speed Steel (HSS) twist drills and lathe tools as well as surface grinding operations will be addressed. The application of measuring and layout tools will be combined with piece-part layout and inspection practices for part production. Materials, including cutting tools, and their properties will be introduced. Non-traditional machining processes, special purpose production machines, as well as hard and soft automation are among additional topics to be discussed. A rudimentary introduction/familiarization with conventional lathes and milling machines will also be included.

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

- Describe the purpose, importance, and responsibilities of various personnel and departments within a manufacturing organization.
- Determine the general salary ranges and job description for a position of employment.
- Outline a plan for personal career path growth in manufacturing.
- Interpret work-related documents such as work orders, process, and various operation sheets.
- Apply appropriate terminology in order to, select, handle, care for, and store tools used to perform bench work, inspection and assembly operations.
- Discuss and apply basic accident prevention practices and procedures, commonly required in manufacturing, as well as personal safety equipment; in order to assure personal health and safety.
- Compare and contrast hardness and machineability ratings.
- Demonstrate procedures for set-up and operation of various sawing, drilling, offhand, and surface grinding machines.
- Perform commonly assigned operator clean up and maintenance tasks associated with grinding, sawing and drilling machines.
- Demonstrate appropriate shop floor etiquette among co-workers and discuss the basic concepts of customer relationships in the context of work teams facilitation.
- Describe various characteristics associated with special purpose machines, mass production, hard and soft automation and assembly techniques.
- Define various common acronyms associated with processes, equipment, and operations common to the manufacturing industry.
- Describe the geometric features and part shapes created by broaching, shaping, planing, lathe and milling machine operations.
- Explain the various abrasive machining processes; and, the high production thread and gear cutting processes.
- Discuss the nature, properties, and selection criteria for various types of materials used to manufacture parts.

Coreq. MTT 110 or MAT 140 or MAT 160

3 Credits

**2 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, chucking 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, precision measuring instruments and appropriate techniques to prepare parts for manufacture on a lathe and verify part dimensions during inspection procedures.
- Identify, select, mount, set-up and adjust appropriate machine tool accessories, attachments, work holding and tool holding devices, cutting tools, and work-pieces in preparation for performing lathe operations.
- Calculate and set speeds/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**

MTT 122 Lathe Operations II

This course is designed to provide supplemental theory and skills instruction in conventional lathe machining operations. Skill embellishment and expanded external, as well as internal surface piece-part machining operations and associated accident prevention practices and procedures will be stressed in this course. Concepts and mathematical calculations for part geometry determination, specific lathe (machining) requirements, and the use of digital readout units will be covered. Carbide/ceramic/diamond cutting tool material, insert, and tool holder identification and selection requirements for lathe work will be explained in detail. Process planning and Geometric Dimensioning and Tolerancing (GD&T) characteristics appropriate for lathe machining will also be addressed.

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

- Set-up and operate a conventional engine lathe to complete intermediate to advanced operations involving trepanning, tool post grinding, radius-turning devices, threading (tap/die) heads, steady, and follower rests.
- Select accessories and attachments, set-up and use face plates, independent, universal, and combination chucks, collect attachments, and a steady rest to facilitate internal surface feature creation such as radii, bores (straight, and tapered), grooves, and chased threads on a lathe.
- Interpret print requirements (including GD&T) and part geometry for machining and inspection of advanced lathe parts.
- Identify coolant requirements; and, using machinability and other factors, select inserts and toolholders for job completion.
- Perform geometric/algebraic/trigonometric calculations for set-up, machining and inspection of parts, to include chamfers, tapers, threads, etc.
- Review reference materials in order to develop a process plan (to include job/operations tooling, and inspection procedures) for machining of a basic lathe piece-part.
- Conduct mathematical calculations associated with tapers, threads, torque, horsepower, unit cycle time/cycle time reduction, and basic estimating.

Prereq. MTT 112

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

MTT 124 Milling Operations I

This course provides introductory instruction in the terminology, design, application, set-up, operation and daily care of conventional milling machines. Accident prevention practices will be stressed.

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

- Lubricate, clean and perform commonly assigned cleanup and operator maintenance duties for a milling machine.
- Interpret work-related documents for piece-part machining on a milling machine.
- Utilize appropriate terminology when referring to milling machines, attachments and associated equipment.
- 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 machine 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 milling machine operations.

Coreq. MTT 111

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

MTT 129 Solids (CAM) Modeling

This course is designed to provide introductory instruction in the theory and skills associated with Computer Aided Manufacturing (CAM) solids modeling industry. 3D design / modeling characteristics as well as criteria for constraint and feature-based design modeling will be stressed. Specific elements of designing for Computer Aided Machining (CAM) facilitation will be addressed.

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

- Determine occupational positions and define basic terms relevant to functioning within the engineering design/manufacturing CAM industries.
- Analyze piece-parts for parametric feature/profile/surface and pattern definition.
- Describe work and tool planes, axes, coordinate systems, and develops feature definitions for manufactured parts.
- Interact with hardware/software in order to create and manipulate various views as a means for appropriately displaying a model.
- Plan and demonstrate steps for creating and modifying (manufactured) part models using a CAM package.
- Develop intermediate to advanced geometric part features and surface models using extrude, revolve, swept, and lofted function solid modeling techniques.
- Manipulate part definition history, and edit shapes via cut and paste functions, as well as Object Linking and Embedding (OLE) functions of the solid modeling software.
- Create/customize and present working (or shopfloor) documents.
- Analyze factors, design and create/customize, and communicate information regarding templates for manufactured part production.
- Perform extraction, as well as import and export operations involving graphical data.

Prereq. MTT 110 and TCC 111

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

MTT 210 CNC Machine Tool Operations

This course is designed to provide appropriately prepared conventional machine tool operators with an introduction to Computerized Numerical Control (CNC) machine tool set-up and operation. Theory will be practical in nature and relate directly to shop based applications. Lathe, and mill, operations will be stressed; however, the theory and concepts will be applicable to various CNC machine tools.

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

- Conduct commonly assigned CNC machine tool operator cleanup and maintenance activities.
- Describe the various axes and coordinate systems associated with differing CNC machine tool types.
- Apply accident prevention practices and procedures while interacting with the Machine Control Unit (MCU), as well as during program proof-out; and, while performing maintenance.
- Discuss the types and principles of MCU offset registers, and their usage.
- Analyze rudimentary program problems and perform basic editing operations to modify G-code programs via Manual Data Input (MDI) operations.
- Edit canned cycle functions utilizing calculations/data prepared by others to create simple G-code programs via conversational graphics as well as by typing on a personal computer.
- Demonstrate upload/download and other Distributed Networked Computer (DNC) functions on a shop floor computer network.
- Set-up, align, and zero-out workholding devices, tooling adapters, and toolholders.
- Perform dry/first/production runs and inspections, adjusting various register values to assure tool qualification, and part dimensionality.
- Communicate and apply piece-part set-up and inspection procedures commonly associated with, advanced Lathe and Milling Operations.

Prereq. MTT 122

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

MTT 213 Manufacturing Processes

This course is designed to provide broad spectrum, first exposure, technical instruction in the fundamental processes (other than material removal) used to produce manufactured goods. Various aspects of manufactures' responsibilities in providing producer and consumer goods, as well as services, will be covered. Generalized methods of conversion of materials into various forms and shapes via processes such as casting, extrusion, injection molding, welding, etc., will be the primary focus of this course. Principles, terminology, as well as practical applications will be stressed. In addition to rounding-out educational experiences for manufacturing/mechanical/drafting and design students, this course is also suited for providing novice engineers, supervisors, and managers with practical experiences in varied manufacturing processes.

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

- Describe the design process and various considerations engineers typically ponder/explore before deciding on a process for manufacturing an article.
- Discuss the production of parts with respect to the fundamentals of the casting and molding processes.
- Demonstrate a basic understanding of the principles involved in the forming, rolling, drawing, extrusion and molding processes.
- Differentiate, document, and demonstrate flame/arc cutting and welding process variables.
- Compare and contrast various bonding, joining (to include welding and related processes), and mechanical fastening methods.

- Research, and describe in an oral presentation, a non-traditional material removal process, or prototyping process available to manufacturers, relating same to aspects of future human development.
- Distinguish between the common surface treatments and finishing processes.
- Relate the classifications of production systems and the impact automation has for each.
- 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.
- Summarize the concepts and criteria for reducing costs and increasing productivity on the shop floor.
- Utilize welding, melting, casting, and molding equipment to conduct laboratory exercises.
- Present examples of how artists can use manufacturing processes to create works of art.

Prereq. MTT 108, MTT 110

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

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 Geometric Dimensioning, and Tolerancing (GD&T) characteristics for milling work will be addressed. Cutters and insert (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 parts 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 catalogs 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 to include 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/plate/vise.
- Position fixtures and perform fly cutting, slitting, straddle, and gang milling operations.

Prereq. MTT 124

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 (CAM) 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.
- 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 Coreq. MTT 210

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

MTT 220 CNC Programming

This course is designed to provide the experienced Computerized 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/utilization/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 thread 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 229 CAM Solids II

This course in advanced principles of Computer Aided Manufacturing/Machining builds on the skills and knowledge gained in CAM Solids I. Topics of instruction will include advanced (multisurface) part modeling and tool path generation for 3-axis milling (similar profiling) machines with additional positioning axis: and multi axis (mill-turn) lathes.

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

- 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 Coreq. 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 Coreq. MTT 229

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

(MUS) Music

MUS 101 Fundamentals of Music

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).

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 autoharp 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.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

MUS 115 Introduction to World Music

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:

- Demonstrate active listening 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

Prereq. ENG 050 and REA 050

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 interpret 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.

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, operetta, minstrel shows and follies 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 music 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 128 Guitar I

This course teaches the basic skills of guitar playing, including music theory, technique exercises, 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 the 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 131 History of Rock and Roll

This course will survey the different genres of popular music in the United States through the Twentieth Century using an historical approach. Lectures will include listening to and analyzing music examples in relation to the social, technical and historical trends.

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

- Demonstrate knowledge of the chronological development of Rock and Roll, its styles, and cultural significance.
- Critique musical performances and recordings in various rock styles.
- Identify and discuss the role of rock music within its aesthetic, historical and cultural contexts.

3 Credits

3 Weekly Lecture Hours

(NET) Network Engineering

NET 110 Network Communications

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 Microsoft Windows 7

This course is designed to introduce students to set up and support the Microsoft (MS) Windows 7 workstation operating system. Students will gain experience in installing, administering, and troubleshooting this enterprise level workstation operating system.

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

- Understand the Windows 7 system features and requirements
- Perform an installation and upgrade of Windows 7
- Migrate user profiles in Windows 7
- Capture, prepare, and deploy system images in Windows 7
- Configure and manage virtual hard disks

- Configure network settings for IPv4 and IPv6
- Configure and manage NTFS permissions to shares, folders, and files
- Configure application compatibility and restrictions
- Configure and monitor system performance in Windows 7
- Configure User Account Controls (UAC)
- Configure Windows Firewall, authorization and authentication
- Configure backup and recovery options in Windows 7
- Configure mobility and remote access controls in Windows 7
- Configure BitLocker and DirectAccess technologies

Prereq. NET 110

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

NET 116 Managing Microsoft Windows Server 2008

This course is designed to introduce students to set up and support the Microsoft (MS) Windows Server 2008 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:

- Plan and install MS Windows Server 2008 using various deployment methods.
- Plan and install Infrastructure Services-DHCP and DNS
- Plan and install an Active Directory Services
- Plan and install Application Services - IIS, Terminal Services, and Hyper-V
- Plan and implement File and Print Services
- Plan for Storage Solutions
- Plan for High Availability-RAID and Network Load Balancing
- Planning Server and Network Security-BitLocker and Secure Network Access
- Securing Infrastructure Services - Secure Remote Access, SSL, and Certificates
- Managing Servers - Remote Desktop, Delegation and Update Management
- Monitoring Servers - Reliability and Performance Console
- Plan and implement Backing Up solutions - Restoring Group Policy Objects

Prereq. NET 115

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

NET 117 Microsoft Window Server 2008 Active Directory

This course is designed for students who support or plan to support Microsoft (MS) Windows Server (currently 2008) Active Directory Domain Services (AD DS). Students will learn to install, configure, and troubleshoot Microsoft Windows Server Active Directory components: Domain Services, Lightweight Directory Services, Certificate Services, Federation Services, and Rights Management Services in a forest or domain.

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

- Install and deploy MS Active Directory Services
- Configure a Read-Only Domain Controller
- Configure Active Directory Lightweight Directory Services
- Establish and maintain trust relationships
- Configure Active Directory replication
- Configure the global catalog and operations masters
- Create and maintain users, computers and groups
- Create an OU Software
- Use the Group Policy Management Console to configure Group Policy settings
- Plan and configure an Audit Policy and account policies
- Manage software through Group Policy
- Manage Group Policy Management MMC snap-in
- Maintain and Back up Active Directory using the Reliability and Performance Monitor
- Create DNS zones and configure additional services-AD RMS & AD FS

- Install Active Directory Certificate Services
- Configure certificate revocation, certificate templates and certificate enrollments
- Configure Certificate Authority Server settings

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, configure, 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.
- 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, and troubleshoot Network Address Translation.
- Install, configure, manage, monitor, and troubleshoot Certificate Services.

Prereq. NET 117

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

NET 210 CISCO Network Support

In this course, students will learn how to select, configure, and troubleshoot Cisco networking devices. The course will also provide the student with fundamental knowledge of computer networking topics including Internetworking essentials, the OSI Model, and various networking protocols including TCP/IP.

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

- Explain the OSI Model and the concept of Layered Communications.
- Explore the fundamentals of Bridging and Switching.
- Learn the origin and functionality of the TCP/IP protocol stack and the Novell IPX/SPX protocol stack.
- Describe Cisco Network Basics and the Cisco IOS.
- Identify features and characteristics of various WAN protocols.
- Configure Cisco Routers and Switches.

Prereq. NET 110

6 Credits

6 Weekly Lecture Hours

NET 230 Network Operating Systems Concepts

Network operating systems concepts provides information needed to understand and support Linux systems in use today. Major concepts include Linux operating system theory, installation, upgrading, configuring (operating system and hardware), file systems, security, hardware options, storage, resource sharing, network connectivity, maintenance and troubleshooting.

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

- Understand components of desktop and Linux server operating systems
- Implement a logical, organized, and secure file system
- Establish login security

- Create login scripts and user connectivity
- Use server console commands, services, and processes
- Perform/rebuild Linux server operating system installation
- Describe messaging and the Internet infrastructure
- Explain differences in Linux versions

Prereq. NET 110

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

NET 231 Network Systems Administration

This course enhances the student's Linux network management and monitoring skills through demonstrations, discussions, and hands-on activities. The course concentrates on installation and upgrade/migration of Linux servers, server and client management, directory services, IP and Internet infrastructure, optimization of server components, security and troubleshooting fundamentals. Students learn how to manage and troubleshoot Linux networks: Intranet and Internet connectivity throughout the organization. An introduction to electronic messaging and network security fundamentals is also included in this course.

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

- Install and troubleshoot a Linux server installation
- Identify and explain the components of Linux upgrade and/or migration
- Modify Linux server components for server management and optimization
- Configure and troubleshoot client management
- Design directory services structure
- Define and manage Linux IP and Internet services
- Explain Linux troubleshooting procedures using various server management tools
- Understand electronic messaging
- Understand network security fundamentals

Prereq. NET 230

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

NET 232 Network Design & Implementation

This course provides students with the necessary advanced skills to design and create a multiple Linux-based network server implementation plan. Students will consider design strategies and implementations to complete a multiple Linux server environment. Students will also learn Linux server tools. The class will focus on directory services including preparation, troubleshooting, and accessibility. This course also provides an in-depth discussion of advanced electronic messaging and network security concepts.

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

- Design a multiple Linux server network
- Describe Linux advanced storage and implementation
- Describe Linux storage configuration management
- Describe and manage troubleshooting tools
- Describe and implement directory services preparation, troubleshooting, and accessibility
- Understand advanced electronic messaging concepts
- Understand advanced network security concepts

Prereq. NET 231

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

NET 242 Network Security Concepts

This course gives the student the skills necessary to apply and implement secure network administration procedures and policies. Students will be able to identify common network threats and vulnerabilities, understand networking compliance and operational security, implement application, data and host security, manage access control, and perform stable cryptography implementations. This course is intended to help prepare students for the CompTia Security+ certification exam.

Upon successful completion of this course, student should be able to:

- Explain the security function and purpose of network devices and technologies
- Apply and implement secure network administration principles
- Implement and use common protocols and default network ports
- Execute disaster recovery plans and procedures
- Analyze and differentiate among types of social engineering, wireless, and application attacks
- Analyze and differentiate among types of mitigation and deterrent techniques
- Implement assessment tools and techniques to discover security threats and vulnerabilities
- Explain the fundamental concepts and best practices related to authentication, authorization and access control.
- Implement appropriate security controls when performing account management
- Use and apply appropriate cryptographic tools and products
- Implement Private Key Infrastructure, certificate management and associated components

Prereq. Net 110

4 Credits

4 Weekly Lecture Hours

(NUS) Nursing

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 pediatric and geriatric 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.

Prereq. MAT 060

1 Credit

1 Weekly Lecture Hour

NUS 110 Fundamentals of Nursing

NUS 110, Fundamentals of Nursing, is the first nursing course in the sequence of four semesters. 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 for biophysical functioning and psychosocial behavior.
- Implement fundamental concepts of nursing practice to promote and maintain health in patients.
- Demonstrate use of fundamental nursing skills utilizing advanced technologies when caring for patients in structured health care settings.

Coreq. BIO 150, ENG 100, PSY 140, NUS 102

8 Credits

4 Weekly Lecture Hours
8 Weekly Laboratory Hours

NUS 111 Nursing Concepts and Practice I

NUS 111 is the second semester course of the nursing program that the students are provided opportunities to integrate knowledge of facts, principles, and advanced technologies acquired in general and nursing education courses previously studied. Application of biophysical and psychosocial factors form the basis of assessing patient's needs, and diagnosing, planning, implementing and evaluating the nursing care of patients with common medical-surgical problems. Structured clinical laboratory experiences are provided concurrent with nursing theory.

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

- Describe how interference with oxygenation affects patients and influences the nursing process.
- Describe how interference with safety/security affects patients and influences the nursing process.
- Describe how interference with the absorption and utilization of nutrients affects patients and influences the nursing process.
- Describe how need interference with regulatory function affects patients and influences the nursing process.
- Describe how need interference with activity affects patients and influences the nursing process.
- Demonstrate critical thinking skills utilizing advanced technologies when caring for patients with common health problems in a variety of structured health care settings.

Prereq. NUS 110, Coreq. BIO 151

10 Credits

4 Weekly Lecture Hours
12 Weekly Laboratory Hours

NUS 205 Perioperative Nursing

The knowledge and technique 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 perioperative 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.

RN Licensure or eligibility

3 Credits

3 Weekly Lecture Hours

NUS 206 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 learner or 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 pathophysiological 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.

6 weekly clinical hours

3 Credits

3 Weekly Lecture Hours

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, clamping, 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.

2 yrs Perioperative Experience

3 Credits

3 Weekly Lecture Hours

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 canceled 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)

6 weekly clinical hours

Prereq. NUS 207

3 Credits

3 Weekly Lecture Hours

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.

Prereq. NUS 111, BIO 151

10 Credits

4 Weekly Lecture Hours

12 Weekly Laboratory Hours

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 oxygenation.
- 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.

Prereq. NUS 210 or C or better. Coreq. PSY 220

10 Credits

3 Weekly Lecture Hours

14 Weekly Laboratory Hours

NUS 218 LPN Concepts

This course is intended to facilitate the transition of the Licensed Practical Nurse to the Associate Degree Nursing Program and then to the role of the Registered Nurse. The curriculum from the first year of the nursing program will be reviewed.

Upon successful completion of this course, the student should be able to:

Evaluate the philosophy and outcome competencies of the college and the nursing program.

- Compare LPN education to the first year of the program.
- Utilize the college resources: Learning Center, Library, Career and Counseling Center, especially services and information related to nursing education.
- Complete a Personal Education Plan that describes the transition from LPN to RN.
- Interpret the Nursing 110 and Nursing 111 syllabus, modules and clinical packets and the student requirements.
- Develop critical thinking and test taking skills related to multiple choice questions.
- Demonstrate proficiency in selected nursing skills.
- Interpret the transcultural influences on nursing care.
- Compare and contrast the different roles of the LPN and the RN.

Prereq. NUS 210, ENG 100, PSY 140, NUS 102

3 Credits

3 Weekly Lecture Hours

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 infusions 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 this course, students should be able to:

- Describe basic anatomy and physiology of the heart.
- Operate a basic 12-lead EKG machine.
- Differentiate between bipolar and unipolar leads.
- Identify the most commonly used monitoring leads.
- Identify the normal components of the EKG.
- Describe the course that an electrical impulse follows through the normal conduction pathway of the heart.
- Recognize 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 direct IV push medications.
- Utilize proper techniques in performing venipuncture.

Prereqs. Successful completion of NUS 111 with a "C" or better for nursing students. No pre or coreqs. for graduate nurses, LPN's, Paramedics, or RN's.

3 Credits

3 Weekly Lecture Hours

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.

Prereq. NUS 110 C" or better

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 alternations in body structure and function
- Correlate subjective complaints with pathophysiologic findings upon physical assessment
- Recognize the social and ethical concerns involved in the evaluation of patient health concerns and the obligation of confidentiality
- Perform a physical examination to validate information obtained in the health history

Prereqs/Coreqs:

For nursing students: Successful completion of a minimum of one year in a basic RN program including basic anatomy and physiology courses.

For paramedic students: Successful completion of BIO 151

For graduate and registered nurses: No prereqs..

Prereq. NUS 111

3 Credits

3 Weekly Lecture Hours

NUS 224 Paramedic to RN Bridge Program Coordinators

This bridge course addresses topics needed for the practicing paramedic to transition into the Associate Degree Nursing Program at Delaware County Community College and then into the role of the Registered Nurse. This course combines didactic, computerized instruction and testing, simulation and clinical experiences expanding on the knowledge previously learned in the paramedic curriculum.

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

- Integrate the theories and concepts of biopsychosocial sciences and liberal arts in the application of Nursing.
- Compare and contrast the different roles of the Paramedic and the Registered Nurse.
- Apply the five components of the nursing process by collection and analysis of data to achieve an individual's optimal level of wellness.
- Implement concepts of nursing practice to promote and maintain the health of individuals.
- Provide responsible, accountable nursing care using fundamental nursing skills and critical thinking for multicultural individuals and groups in a variety of health care settings.
- Utilize the college resources; Learning Center, Library, Career and Counseling Center, with emphasis on services and information related to nursing education.
- Prior acceptance for advanced placement into the Nursing Program.

Prereq. BIO 150, BIO 151, ENG 100, NUS 102, PSY 140

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

(OCS) 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 assuring proper adherence to the codes by craftspeople 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
- Masonry 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.
- List the common types of motors; electric, air, and hydraulic and discuss their applications.
- Recognize power transmission devices and describe, their use, care, and maintenance.
- Describe the different types of turbines, compare and contrast their respective uses, their care, and maintenance.
- Explain the principles of operation, care, and use of heat exchangers within a processing environment.
- Discuss the differences between furnace types, their construction, principles of operation, components, care and maintenance.
- Describe the various types of process equipment, comparing appropriate uses, maintenance, and relevant troubleshooting requirements.

Coreq. PCT 101

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

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 operators and process control technicians.
- 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.

Coreq. PCT 100

4 Credits

2 Weekly Lecture Hours

4 Weekly Laboratory Hours

PCT 110 Safety, Health and the Environment

This course will provide students with an overview of the current petrochemical safety, health and environmental regulations, standards, and laws. The course will provide a survey of potential industry/product and facility hazards. Methods of protecting personnel through programs, procedures, and personnel protective equipment, including advanced personal safety and health measures will be addressed. In addition, the course will provide instruction in emergency response to spills, leaks and releases. Facility safety equipment, as well as warning and alarm systems will be covered.

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

- Relate the need for knowledge of the various laws and regulations affecting the petrochemical industry.
- State the role of Safety, Health and the Environment (SHE) regulations, standards and laws as they apply to the processing, storage, and distribution of petrochemicals.
- Determine the individuals responsibility for, as well as their role in the implementation of a facilities safety, health, and environmental prevention and protection program.
- Identify potential safety and health hazards associated with petrochemical processing facilities, and the outcomes these hazards can present for workers and the public at large.
- Prescribe methods of abatement for various safety and health hazards.
- Identify potential environmental hazards and discuss varied issues regarding their abatement.
- Describe the individuals role in Emergency Response to spills, leaks, or releases of a facilities chemicals, intermediates, or products.
- Specify the need and demonstrate the usage of basic personnel protective equipment.
- Relate the use of typical facilities safety equipment, and its application, in specific instances.

Coreq. PCT 101

3 Credits

3 Weekly Lecture 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 for 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 pressure, 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 information between MTU and RTUs with regard to the limiting factors of a real time SCADA system.
- Explain the primary purpose of process control and identify the four main processes variables associated with process control regulations.

Prereq. PCT 101 and MAT 110 or higher

4 Credits

PCT 112 Power Plant Processes

In this course provides an introduction to the technical requirements associated with auxiliary equipment, as well as the safety, economics and maintenance required to meet the criteria for appropriate power plant operation. This course is designed to facilitate assimilation of knowledge and skills associated with various individual pieces of auxiliary plant equipment for the purpose of providing instruction in the function and process of performing daily operating responsibilities and functions. The interplay of business fundamentals and the importance of quality and systematic operations, along with energy management techniques will be studied. The principles and application of operations, maintenance, material handling and process trouble shooting techniques will be introduced.

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

- Identify the role and responsibilities of a production, and a process technician.
- Relate the core values individuals need to demonstrate in order to meet management's goals and objectives.
- Identify and discuss safety standards and hazards associated with processing plants.
- Describe the use of permit systems developed for routine work and maintenance assignments as required by regulatory agencies such as Occupational Safety and Health Administration (OSHA)
- Explain quality as it relates to importance as a competitive tool, expressing the importance of employer/employee commitment.
- Cite the importance of good communication skills, and the effect of same on productivity, safety, and quality of a processing plant's operation.
- Describe the physics, and the thermal properties, involved in the operation of a processing unit.

- Discuss the energy characteristics associated with processing unit, such as; heat energy, kinetic energy (rotating equipment and flow), potential energy (vessels full of chemicals) and pressure (steam, bottled gases).
- Describe the relevancy of process sampling, and analytical testing, as a means for enhancing the production of a safe and efficient product.
- Explain the purpose of a processing unit, relating the process control assignments associated with the monitoring and data collection (as part of the normal operations of the unit).
- Define the importance of routine and preventive maintenance assignments for assuring the efficiency, along with the reliability, of processing equipment.
- Relate the operational procedures (in a macro manner) for unit shutdowns, turnarounds, and start-ups relating some of the cost issues, hazards, roles, and responsibilities for various support personnel during system startup.

Prereqs. PCT 100, Plant Equipment, MAT 111, Technical Mathematics II, IST 105, Industrial Systems Drawing Interpretation, Power Plant Fundamentals, EGY 100

Coreqs. IST 200, Pumping Systems, PHY 100, Technical Physics
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 drawings, symbols, control loops, measurements and variable measurements will be presented. Additionally, topics to be studied will include, but not be limited to: conductivity, 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 phoneme 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 correct action.

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.
- Identify the philosophers discussed in class and present their views.
- Critique the views of the philosophers discussed in class.
- 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.
- Present the ethical theories discussed in class.
- Explain the ethical theories discussed in class.
- Identify the philosophers discussed in class and present their views.
- Critique the views of the philosophers discussed in class.
- Formulate and rationally defend an ethical position on a contemporary moral problem.
- Apply the philosophical method of argumentation to issues in daily life.

Prereq. ENG 100

3 Credits **3 Weekly Lecture Hours**

(PHY) Physics

PHY 100 Technical Physics I

This is an algebra-based course designed primarily for students in the technologies. The goal of the course is to provide the student with an integrated view of how the basic concepts of physics are applied to mechanical, fluidal, electrical, and thermal systems. The course uses real examples to demonstrate how these concepts are applied and stresses the accurate measurement and reporting of important quantities associated with the different systems. 2 hours lecture, 2 hours of laboratory each week.

Upon successful completion of the course, the student should be able to:

- Define physics as the study of motion, identify where the motion occurs, and establish the necessary quantities and standard units and mathematics required to fully describe the motion.
- Identify, calculate, and measure the Force-like Quantities in correct units as they are found in the four physical systems.
- Describe the concept of Resistance, identify the factors that control it in each system, and develop and apply expressions for Resistance 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

PHY 101 Technical Physics II

This course is a continuation of Technical Physics I. In this course, additional concepts are covered and their application into mechanical, fluidal, electrical and thermal systems presented.

Upon successful completion of this course, the student should be able to:

- Describe in mathematical expressions the energy associated with matter or charge 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 theorem, 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

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

PHY 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 151: Coreq: MAT 152

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, 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 and MAT 152

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, the course covers the linear and rotational kinematics and dynamics of, and the principles, laws and concepts pertaining to, the motion of solids, along with specific applications relating to liquids and gases.

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 electrodynamics, 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

PHY 230 Modern Physics

This course is an introduction to topics in Modern Physics. Students will be introduced to Special Relativity, Wave-Particle Duality, Quantum Mechanics, Atomic physics, Nuclear physics, Particle Physics and Cosmology. This course is intended for students intending to major in physics and for students who need an extra course in Modern Physics.

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

- Apply the concept of relativity to the physical world.
- Discuss the concept of Wave-Particle Duality and Quantum Physics and its implications.
- Describe the structure of matter as described by Atomic and Molecular physics
- Describe and explain physics at the nuclear level
- Describe the fundamental particles found in nature and their role in cosmology

Prereq. PHY 132 and MAT 161

3 Credits

3 Weekly Lecture Hours

(PLB) Plumbing

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 the history of plumbing, materials, tools and ideas in the plumbing industry. Traditional approaches are covered to ensure that the student receives a broad exposure to all materials and practices potentially encountered in the workplace.

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

- Explain the history of plumbing
- Explain the development of plumbing codes
- Define terminology associated with the trade, for example; 'fitting allowance'
- Specify fittings correctly
- Identify various patterns of fittings
- Define different types of sketches
- Demonstrate the proper use of measuring tools
- Calculate dimensions and interpret piping symbols
- Perform basic measurements (expressed in feet, inches, and fractions)
- Accurately measure pipes, threads, runs and angles related to plumbing installations
- Calculate pipe sizes for drainage and service lines
- Identify tools used to install plumbing systems
- Explain the various methods of assembling pipe

Must be employed by a Master plumber

5 Credits

3 Weekly Lecture Hours

PLB 101 Plumbing Theory II

This continuation 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 work place.

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.

Must be employed by a Master plumber and PLB 100

5 Credits

PLB 102 Math for Plumbers

This course is designed to provide the student with relevant theory and skills in solving practical, industrially based, trade-related 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. Emphasis is placed on providing the student with a problem-solving methodology applicable to new and future mathematical concepts. 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:

- 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 math procedure and math precedence.
- Relate geometry to piping mathematics.
- Define formulas/equations.
- Utilize square root to solve triangles.
- Describe the relationship of angles formed by intersecting lines.
- Utilize the proper unit of measure for each task.
- Interpret various pipe weights and use a pipe data sheet.
- Calculate pipe clearances.
- "Take off" for fittings.
- State generic rules for fitting allowance.

Must be employed by a Master plumber and PLB 101

5 Credits

3 Weekly Lecture Hours

PLB 103 Installation & Repair

This course is designed to stress good solid plumbing practices applicable to all areas of plumbing materials, installations, and repair. Emphasis will be placed on advanced concepts and material selections 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 work place. Proper selection, installation of materials, application, and use of tools according to plumbing codes will be covered. In addition, practical application in the lab of the theoretical material covered in class will be stressed throughout the course.

Upon successful completion of this course, students will be able to:

- Explain how to install gas piping correctly.
- Explain how to install domestic gas equipment safely.
- Describe pipe threads.
- Describe loop and circuit vents and how they are installed.
- Identify and perform the various methods of supporting pipes.
- Sketch the various devices used to support pipes.
- Describe the purpose of cleanouts.
- Identify the various locations and sizes of cleanouts.
- Identify the size and types of drainage traps.
- Describe siphonage and its effect on various types of traps.
- Describe backpressure and how to prevent it.
- Discuss capillary attraction and evaporation.
- Describe the types of fixture traps and where they are used.
- Explain why and where grease traps are used

Must be employed by a Master plumber and PLB 101

5 Credits

3 Weekly Lecture Hours

PLB 104 Bathroom Installation

This course explains the manifold rules and regulations regarding shop safety. It demonstrates the right ways to lay out a job by the department of Labor and Industry, as well as, discuss job site hazards. In addition, it places emphasis on the power threader, soldering, brazing and safety. Students are taught how to create a detailed tool and material list as well as how to complete the manifold drawing to scale.

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

- Understand job site hazards and apply safety regulations.
- 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.
- Create a tool and material lists for said bathroom.
- Describe siphonage and its effect on various types of traps.
- Describe backpressure and how to prevent it.
- Discuss capillary attraction and evaporation.
- Describe the types of fixture traps and where they are used.

Prereq. Must have completed two years apprentice and working for a master plumber.

Must be employed by a Master plumber

1 Credit

3 Weekly Lecture Hours

PLB 200 Heating Systems

This course is designed to help the heating professional become comfortable with the electrical portion of an installation or service call. The program covers basic electric circuits, flow of electricity, switches, grounding, electrical terms and principles, electric power in the home, electric wire and supplies, tool and test equipment, transformers, electric heating components, wiring diagrams, practical wiring of a heating appliance, and troubleshooting.

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

- Identify basic electrical circuits.
- Define two Laws of Electricity and understand fundamental electrical terms.
- Describe how electric power gets to a home and some safety considerations.
- Explain types and common uses of electrical wire (conductors).
- Splice and connect wires.
- Extend a circuit and some common electrical parts.
- Use the proper tools and test equipment to perform basic electrical work.
- Demonstrate how electrical power from the Power Company transformer can reduce to run low voltage components in a home.
- Identify the essential electrical components of a heating system.
- Perform the basics of wiring, schematics, ladder, and pictorial diagrams
- Read a schematic and ladder-wiring diagram, and wire a boiler.
- Troubleshoot an electrical circuit.
- Install gas utilization equipment in accordance with their listing and the manufacturer's instructions.
- Perform methods of vent installations of venting systems based on the operating characteristics of the gas utilization equipment.
- Adjust the burner input to the proper rate in accordance with the equipment manufacturers' instruction by changing the size of a fixed orifice, by changing the adjustment of an adjustable orifice, or by readjustment of the gas pressure regulator outlet pressure without overfiring.
- Perform modifications to an existing appliance installation for the purpose of fuel conservation.

Must be employed by a Master plumber

2 Credits

3 Weekly Lecture Hours

PLB 202 Blueprint Reading

This course was designed for plumbing and pipe fitting students who need to develop the ability to interpret trade blueprints and plan the installation of the required plumbing. The appropriate method to interpret all types of trade drawings and make orthographic or isometric sketches of plumbing installations will be discussed. The student will have the opportunities for extensive practice which provide reinforcement and additional performance skills will be presented.

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

- Read blueprints and sketch plumbing features.
- Discuss the purpose of specifications and plumbing codes.
- Measure scales lengths and uses of the architect's scale.
- Discuss materials, construction, and pipe connections for a floor drain.
- Identify floor plan symbols for sinks and other kitchen equipment and describe the details of kitchen planning.
- Identify the floor plan symbols for bathtub, water closet, lavatory, and shower.
- Interpret the rough-in sheet.
- Discuss the installation of a wall-hung lavatory.
- Show why isometric drawings are used in the plumbing trade.
- Show pipe sizes on an isometric pipe drawing.

Must be employed by a Master plumber

3 Credits

3 Weekly Lecture Hours

PLB 207 Cross Connection Control

This course presents the essential ingredients of blending theoretical and practical aspects of cross-connection controls along with specific guidelines concerning the theory of back-flow prevention and administration. It provides extensive information on troubleshooting from a hands-on point of view and is designed to be used as an on-the-job troubleshooting tool. Standardized training in the backflow/cross-connection control field will be addressed.

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

- Pass ASSE (American Society of Sanitation Engineers) Backflow Certification Exam for Testers.
- Communicate historical data regarding cross-connections.
- Perform the five methods of properly controlling backflow.
- Articulate and define various cross-connections definitions.
- Identify the various responsibilities of public and private agencies for cross-connection controls.
- Apply, define and identify the appropriate plumbing codes and standards.
- Discuss basic hydraulics and the fundamentals of cross-connection controls.
- Utilize and apply the safety program material and implementation into the workplace.
- Implement installation guidelines for backflow prevention assemblies.
- Observe the condition of the test gage equipment during all steps of the field test procedure.
- Troubleshoot and repair the problem with a backflow prevention assembly.
- Document the validity of the inspection and certification of a backflow prevention assembly.
- Report the results of the field-testing operations.
- Maintain and generate all records and certifications of all backflow prevention assembly tests performed.

Must be employed by a Master plumber

3 Credits

3 Weekly Lecture Hours

PLB 208 Philadelphia Plumbing Codes

This course reviews the major aspects of Philadelphia Plumbing Code (1996 Edition). Emphasis will be placed on general regulations, plumbing definitions, materials, sanitary and storm water systems. Students will be exposed to sketching, laying out, and sizing of various systems.

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

- Determine if a back-flow prevention assembly is necessary.
- Check with your inspector on the appropriate assembly required for the job.
- Determine the minimum water pressure required at the most remote outlet on any potable water system.
- Identify the requirements on a potable water system flush-out valve.
- Identify and operate the vacuum breaker on the discharge side.
- Demonstrate how a direct connection to a sewer or waste line can be properly utilized.
- Connect and identify appropriate pipelines.
- Size drainage and vent lines.

Must be employed by a Master plumber

3 Credits

3 Weekly Lecture Hours

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 or 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.

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 paralegal 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.

Prereq. 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.

Prereq. ENG 050 and REA 050

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.

Prereq. PLG 110

3 Credits

3 Weekly Lecture Hours

PLG 130 Technology in the Law

This course is a general introduction to the use and the application of legal specialty software programs in the modern practice of law. The course includes hands on use of software programs frequently used by practicing paralegals in assisting attorneys in the practice of law and in the administration of the courts and trials.

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

- Comprehend the appropriate technologies applicable to various legal environments.
- Apply the relevant computer applications to legal problems.
- Identify the ethical issues that arise from the use of technology and the law.
- Comprehend approaches to constantly improve understanding of computer applications as they relate to the practice of law.
- Comprehend the impact of modern technologies on court procedures and court management.
- Apply general computer programs in combination with specific software used in the practice of law.

Prereq. ENG 050 and REA 050

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 the 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.

Prereq. PLG 110 Coreq. PLG 120

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.

Prereq. PLG 110

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.

Prereq. 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:

- Describe 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 re-searching 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 necessary in personal injury litigation.

Prereq. 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 and PLG 120

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 110

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 disposition 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 way 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. ENG 050 and REA 050

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) Political Science

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 governments.

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

- Distinguish between political philosophy and political science.
- State and explain the basic issues addressed in the phi.
- 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.

Prereq. ENG 050 and REA 050

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.

Students are encouraged to participate in civil, political and community activities in a democratic society.

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 permanent 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

POL 200 World Affairs

This course deals with the theory and practice of international relations.

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

- Identify the principle characteristics of national states.
- Analyze the role of power in international politics.
- Identify the major constraints a national state must deal with in the formulation and implementation of foreign policy.
- Evaluate the relations between East and West in the post-World War I era.
- Assess the impact of the United Nations on the relations between national states in the contemporary world.
- Model appropriate strategies to acquire various methods for gathering information for the development, comprehension and practical application of said information in the deciphering of issues involved in world politics.
- Relate the foundations of instruction to the practice of reading and interpreting texts at the secondary level.
- Plan developmentally and culturally appropriate strategies to address individual differences among political adversaries.
- Enrich interdisciplinary activities by incorporating innovative technology and multimedia activities.
- Teach questioning and communication skills as an integral part of cultural development.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

POL 210 Principles of Public Administration

The general principles and theories of administration are analyzed and related to the management of public business.

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

- Evaluate the trends and philosophies of bureaucracy in the public and private sectors.
- Analyze the relationship of the public administrator to the various branches and levels of government and to the general public.
- Describe the roles of the public administrator in terms of goal setting, organizational and personnel procedures, and financial management.

3 Credits

3 Weekly Lecture Hours

(PSY) Psychology

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.
- Depict 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.

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

- Explain the nature of psychology and describe the methods used by psychologists to study behavior.
- Identify the major physiological structures involved in the study of behavior.
- Identify the principles of sensation and perception describing illustrative phenomena.
- Describe current theories of learning and thinking explaining their influence in education, life-span development and other life situations.
- Describe the major trends in explaining human emotion and motivation and how they are assessed.
- Identify the major theories of human personality and development.
- Evaluate the impact of major trends in analyzing ourselves, interpersonal and social relationships, and the origins, classification and treatment of mental disorders.
- Explain the relationship among physiology, perception, learning, cognition, motivation and personality, applying them to understanding life situations.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

PSY 200 Personality Theories

Emphasis in this course is on the understanding and application of basic concepts of psychodynamic, behavioral, cognitive and social cognitive, and humanistic-existential perspectives to personal and interpersonal functioning.

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

- Detail the characteristics of psychoanalytic theory.
- List and describe the characteristics of behaviorist and social learning theories. Describe the characteristics of humanistic psychology.
- Identify the characteristics of cognitive theories of personality.
- Explain how an eclectic blend of several major personality theories can be applied to common life situations and experiences.

Prereq. PSY 140

3 Credits

3 Weekly Lecture Hours

PSY 202 Theories of Counseling

This course is a one-semester introduction to the basic theoretical approaches used in counseling. This course is designed to give students an overview of the different psychological theories used by counselors, therapists and human service professionals. A goal of the course is to allow students with an interest in human services to better understand the options open to both counselors and clients when engaging in the therapeutic process. While the curriculum will not make counselors of the students who complete this course, it will provide a foundation of knowledge about the major theories.

Upon successful completion of this course students should be able to:

- Describe relevant counseling theories
- Understand various ethical issues in the practice of counseling
- Describe the terminology associated with various theories
- Identify the major contributors associated with various theories
- Explain the assumptions of each theory
- Identify the goals of each theory
- Identify the roles of the therapist and the client within each theory
- Explain the process of therapy for each theory
- Identify the various techniques associated with each theory
- Evaluate the strengths and limitations of each theory
- Describe the characteristics of a multiculturally competent counselor

Prereq. PSY 140, ENG 100

3 Credits

3 Weekly Lecture Hours

PSY 203 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 services, 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 lab 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 multiculturally 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 202)

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 developing and understanding 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.
- Describe societal issues associated with addictions/dependency.
- Understand the contribution of psychological perspectives to addiction.
- Explain the techniques involved in treatment of addiction.
- Identify programs that provide prevention services as well as those which provide rehabilitation programs and support services.
- Develop a working knowledge of 12-Step Programs and their benefits to addicted persons and their families/friends.
- Realize the consequences of addiction on family members and friends (Co-dependency, enabling, interventions)
- Understand the relationship between HIV/AIDS and Substance Abuse.
- Define the term Dual-Diagnosed and provide examples demonstrating this.
- Identify Legal and Ethical Standards involved in working with substance abuse clients.
- Explain the methods of drug testing and its impact on society.
- Describe the similarities and differences involving addictions to legal substances (tobacco, alcohol, food, prescribed medications) vs. illegal substances (cocaine, 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 to:

- 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 human 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 systems of stratification within the United States. Topics include: race and racism, ethnicity, sex and gender and sexual orientation. Upon successful completion of this course, students should clearly understand the legal and policy based frameworks which created group-based inequality for various groups within the U.S.

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

- Understand the etiology of racist, homophobic, ethnocentric, and sexist ideologies.
- Demonstrate critical thinking on issues of race and racism, ethnicity, sex and gender, and sexual orientation.
- Describe the impact of minority and majority status as it pertains to economic, psychological and social experience.
- List contradictions between the idea that we all have certain inalienable rights and the reality that certain groups in our society continue to be denied many of those rights.
- List contributions of those outside of the 'mainstream' and understand how those marginalized 'others' started social movements which challenged the U.S. to become more democratic, and inclusive.

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, psychological, 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 instructions 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

PSY 242 Adolescent Psychology

This course is an investigation of theory, research, and practice related to the biological, cognitive, social, and emotional processes throughout adolescence from puberty to maturity. Adolescent's unique functioning in the physical, cognitive and psychosocial domains will be fully explored through analysis of research. The course is also designed to promote understanding of adolescence for teachers and youth workers in educational settings, community, and other applied developmental fields. Emphasis is placed on the social contexts (school, family, peer, and culture) within which the primary developmental changes occur. The course will address a wide range of adolescent experience, from common developmental characteristics to risk behaviors, such as depression, anxiety, eating problems, pregnancy, substance abuse, etc.

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

- Describe the history of the concept of adolescence.
- Explore the role of research as it is applied to issues of significance in adolescence.
- Describe physical changes and the psychological reactions to pubertal changes during adolescence.
- Explain gender development, emerging sexuality and feelings of intimacy during adolescence.
- Explain various perspectives on cognitive development during adolescence.
- Explain various perspectives on psycho-social development (self/identity, emotional, moral, social development) during adolescence.
- Evaluate the family, school, peer, media influences on all aspects of adolescent development.
- Know the factors that affect career choice and the world of work.
- Investigate specific problems associated with adolescent development.

Prereq. PSY 140

3 Credits

3 Weekly Lecture Hours

PSY 290 Adulthood and Aging

This course is an examination of the physical, psychological, cognitive, social and cultural changes that occur as people move from adulthood into old age. It explores the controversies, myths, realities, similarities and differences in growing older today in America as well as in other cultures around the world.

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

- Identify the basic principles underlying development from the adult years through the end of life.
- Identify the major physical and psychological characteristics of adult development from adulthood to old age.
- Evaluate the various theoretical approaches to cognitive, emotional, social and personality development in adult development through old age.
- Evaluate the relevance of cross-cultural research findings in adult development and aging.

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

(REA) Reading**REA 30 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 strategy for understanding unknown words.
- Demonstrate understanding in reading comprehension.
- Identify and use language and structural clues as an aid to comprehension in reading materials.
- Demonstrate critical reading through writing.
- Demonstrate strategic reading in a variety of materials.

Credits not applicable to a degree

3 Credits

3 Weekly Lecture Hours

REA 50 Developmental Reading and Study Skills

Reading II is designed for students who need to improve their ability to understand and retain the material they read in college. Emphasis in the 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 critical thinking through writing.
- Demonstrate strategic reading in a variety of materials.

Prereq. Reading Placement Test, REA 030, or ESL 045

3 Credits

3 Weekly Lecture Hours

(RTH) Respiratory Therapy**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 why patients may require ventilatory support
- Discuss the importance of monitoring patients requiring ventilatory support
- Describe when and how to successfully wean a patient from mechanical ventilation

Prereqs. BIO 150; each with a grade of "C" or better.

Coreqs. RTH 103 and BIO 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 protocols 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.

Prereq. BIO 150 Coreq. RTH 102, BIO 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.

Prereq. 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.

Prereq. RTH 102 and RTH 103

5 Credits

RTH 110 Respiratory Therapy Principles and Practicum I

This course is designed for students majoring in Respiratory Therapy. The course begins with the study of the sciences and how they relate to the respiratory system and to respiratory care. An in-depth study of the anatomy and physiology of the cardiopulmonary system is also included. Students will be expected to learn Medical Terminology in a self-study format. Students will learn the indications and complications with administering medical gases to patients. Acid base balance within the body will be presented. The history of the field of Respiratory Care will be discussed. Students are guided and directed by an instructor in the laboratory. This reinforces the principles taught utilizing the laboratory approach. Assignments applying the principles of physics and chemistry essential to respiratory care will be performed in the stimulation lab. Models and computer simulation will be utilized when appropriate.

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

- Discuss and apply the principles of the physical sciences as they relate to Respiratory Care.
- Discuss the principles of cardiopulmonary anatomy and physiology and apply in the clinical situation.
- Describe acid-base physiology and compensatory mechanisms and apply the knowledge in clinical situations.
- Discuss the concepts of team approach and patient-therapist interactions and apply the concepts in clinical situations.
- Recall the history and purpose of the field of Respiratory Therapy.
- Discuss the legal and ethical concepts as they relate to the field of Respiratory Care.
- Discuss how oxygen is manufactured and stored. Discuss the indications and complications involved in oxygen administration.
- Administer medical gas therapy utilizing the appropriate equipment for the patients medical condition.
- Ensure the accurate delivery of medical gas concentrations. Troubleshoot medical gas delivery devices.
- Communicate using medical terminology.

Prereqs: Completion of any algebra based math course:

MAT 100 or above, (not including MAT 120 or MAT 131, MAT 125, MAT 126, MAT 210) with a grade of "C" or better. DCCC Placement test scores for Math Placement into MAT 135 or above. Successful completion of the College Algebra CLEP exam (College Level Examination Program) Transfer of credit from another regionally accredited institution of a "C" or better in a math course equivalent to MAT 100 or above, (not including MAT 120 or MAT 121, MAT 125, MAT 126, MAT 210) This course must have been completed within 5 years of starting RTH 110.

ENG 100 C or better, CHE 110

8 Credits

60 Weekly Lecture Hours

120 Weekly Laboratory Hours

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.

Prereq. 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.

Prereq. 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.

Prereq. 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 effecting the respiratory system.

Prereq. RTH 105 Coreq. RTH 200, 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 effecting 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) Russian

RUS 101 Elementary Russian

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.

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

- Recognize the essential differences between the Russian and English pronunciation systems
- Understand in oral and written form first-level content words and grammatical principles
- Read aloud in Russian with due attention to principles of good pronunciation including word stress and intonation patterns
- Produce appropriate pattern and sentence transformation
- Write in dictation from with a reasonable degree of accuracy from materials that have been studied
- Recall familiar facts of Russian and Slavic civilizations from reading assignments

3 Credits 3 Weekly Lecture Hours

(SCI) Science

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 the 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. REA 050 or Equiv.

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

SCI 105 Introduction to Nanotechnology

This course will cover the application of nanotechnology 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".
- Discuss instrumentation, such as SEM and STM, which is used at the nano level.
- Hypothesize future applications of nanotechnology.

Prereq. REA 050

3 Credits

3 Weekly Lecture Hours

SCI 110 History of Science

This course, designed as a non-laboratory science 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. ENG 100

3 Credits

3 Weekly Lecture Hours

(SOC) Sociology

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.
- Interact effectively in the social context.
- Describe the significance of self-awareness in building good human relationships.
- Distinguish between the formal and informal structures of an organization as they relate to appropriate human relations.
- Describe appropriate employee on-the-job behavior, especially during the first few probationary months.
- Describe how the impact of human relations in the leadership and motivational areas can affect productivity.

3 Credits

3 Weekly Lecture Hours

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 intervention, 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 120 Social Problems

This course studies contemporary social problems from theoretical and practical perspectives. Field study brings students into contact with both public and private agencies and institutions. Special projects are required.

Upon successful completion of this course students should be able to:

- Apply the sociological perspective to the field of social problems.
- Describe the origin, development, and society's possible treatment of at least two contemporary and three traditional social problems.

Prereq. ENG 050 and REA 050

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 systems of stratification within the United States. Topics include: race and racism, ethnicity, sex and gender and sexual orientation. Upon successful completion of this course, students should clearly understand the legal and policy based frameworks which created group-based inequality for various groups within the U.S.

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

- Understand the etiology of racist, homophobic, ethnocentric, and sexist ideologies.
- Demonstrate critical thinking on issues of race and racism, ethnicity, sex and gender, and sexual orientation.
- Describe the impact of minority and majority status as it pertains to economic, psychological and social experience.
- List contradictions between the idea that we all have certain inalienable rights and the reality that certain groups in our society continue to be denied many of those rights.
- List contributions of those outside of the 'mainstream' and understand how those marginalized 'others' started social movements which challenged the U.S. to become more democratic, and inclusive.

Prereq. PSY 140 or SOC 110

3 Credits

3 Weekly Lecture Hours

SOC 219 The Sociology of Race And Immigration

In this class we will examine the 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 able to "make it" and others continue to be disproportionately disadvantaged; and (3) race continues to be a central organizing principle in American society.

Furthermore, we will examine the "other" from the viewpoint of those marginalized in society. Therefore, we will explore the relationship between the dominant - hegemonic-culture, and sub-cultural beliefs, attitudes, challenges, and attempts to redefine group status. This means we will focus upon power relationships and the dynamic of group attempts to access power, and how these movements have shaped and transformed the American social fabric.

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

- Describe the social construction of racial and ethnic categories.
- Demonstrate critical thinking on issues of race and ethnicity.
- Demonstrate critical thinking on racial inequality.
- List the racial contradictions inherent in U.S. society, and different strategies toward resolving them.
- Describe various immigrant experiences in the U.S.
- Describe and discuss theories of integration.
- Evaluate the positive and negative dimensions of your own cultural experience.
- Discuss and write about structural forces, which shape social activity.
- Present ideas clearly, briefly and in an engaging manner in a public setting.
- Speak in front of the class in a formal and professional manner.

Prereq. SOC 110, SOC 215 or PSY 225

3 Credits

3 Weekly Lecture Hours

SOC 220 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 human freedom.
- List the major advantages and disadvantages of persons and task-oriented leadership in groups and organizations.

Prereq. SOC 110 or PSY 140

3 Credits

3 Weekly Lecture Hours

SOC 240 Human Geography

This class will look at how places and regions are interconnected, how they are unique, and how people, ideas, and things moving from one locale to another can change a place or region. After taking this class, students will view their surroundings in new ways by asking questions like: Why are peoples, cultures, and places what they are? Why are they where they are? How can geography help me understand today's changing world?

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

- Define and describe the role of geography as an academic discipline its relation to other subjects, and career possibilities.
- Explain the major course themes of globalization and cultural diversity, and how they relate to the various course topics.

- Describe the major concepts and principles concerning our human relationship to, and use of, the earth's environment from an historical perspective.
- 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.
- Describe 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 260 Research Methods In the Social Sciences

This course investigates and analyzes both quantitative and qualitative research methodology. It is designed to give students the skills to examine social science issues in America through creating and utilizing empirical research. Study is concentrated on experimentation, types of research sources, surveys construction and field participation. Research papers are required.

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

- Describe the scientific method and its assumptions as a way of knowing and why it is used in research
- Explain the relationship between theory and research
- Apply the steps in the research design and distinguish between correlational designs
- Describe and distinguish the difference between independent and dependent variables and techniques of experimental control
- Create a literature review on a relevant social science topic
- Detail the process of creating a hypothesis and question for examination through research
- Describe index and scales construction
- Explain the differences between quantitative and qualitative research including correlation, association and causation
- Describe the meaning of validity and reliability in research while demonstrating an understanding of construct, internal and external validity and the threats to validity
- Explain the importance of the IRB and ethics in research
- Explain the difference between random and systematic error
- Apply methods to measure causal and/or associative changes in a dependent variable
- Describe the difference between primary and secondary data
- Describe the experimental and quasi-experimental design
- Explain single IV, factorial and single case designs
- Conduct mock interview and debriefing
- Describe the purpose of a research proposal and write a sample proposal in APA research format

Prereq. DPR 100, MAT 060, SOC or PSY above 100

3 Credits **3 Weekly Lecture Hours**

(SPA) Spanish

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 104 Introductory Medical Spanish for Health Care Professionals II

This course prepares current and future health care professionals with an advanced level competence in medial Spanish. The goal for this course is to continue the foundation for the medical conversations in Spanish using the present and past tenses. Emphasis will continue to be placed on short conversations that occur in the health care environment which include: obtaining a patient health history, the patient registration interview, and questions to conduct a basic physical assessment and other critical phrases that are necessary to communicate.

Using the appropriate Spanish medical terminology, students will be able to assess the patient's health risk to disease and respond to patient concerns in an appropriate manner through these brief/basic conversations. Cultural themes are embedded in the course to allow students to understand the cultural and societal factors that influence patient communication with health care providers. These critical skills will allow health care professionals to provide care in a culturally appropriate manner thus improving health outcomes.

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

- Initiate conversations in Spanish using basic to intermediate level grammar that translates into brief conversations. Conversations can be in present and/or past tense.
- Exhibit vocabulary knowledge of the most commonly used Spanish medical terminology.
- Obtain important information from patients by asking medical questions in Spanish relating to: the human body; signs and symptoms of disease; medical history; nutrition; pain and comfort; and administrative health care needs for scheduling appointments; recommending the right medical professional for a specific problem; and insurance information. This will be able to be done in present and/or past tense.
- Demonstrate competent listening skills by responding to oral cues given in a simulated situation. Listening skills will encompass the present and/or past tense.
- Identify cultural non-verbal behaviors exhibited by health care practitioners and by Spanish speaking patients that are essential in health care.
- Demonstrate the necessary tools for correct pronunciation of Spanish and basic to intermediate reading. Pronunciation will be in the present and/or past tense.

- Differentiate between basic health care conversations and from a detailed dialogue and know when a qualified interpreter is needed to be able to effectively communicate with a Spanish speaking patient.

Prereq. Students should have a good foundation in medical terminology and body systems.

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 speeds.

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 210 Conversational Spanish

This is the first part of a two-sequence-conversation course designed for students who already possess a basic knowledge of Spanish. Based on the five organizing principles of the Standards for Language Teaching and Learning (Communication, Culture, Connections, Comparisons, and Communities), the class will focus on all skills: listening, writing, reading and speaking). However, emphasis will be given to the improvement of the students' listening and speaking skills as well as the development of conversational strategies. Activities will focus on small-and-big group discussions, pair work and individual presentations. Grammar will be reviewed and presented within context. Spanish will be used throughout class. The instructional language for this course will be Spanish. Technology will be used to enhance the learning process.

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

- Communicate, orally and in written form, on a variety of topics covered in class
- Understand audio and video texts related to topics covered in class
- Read and discuss stories, poems, plays, etc. written by Hispanic authors
- Communicate with increased grammar accuracy
- Demonstrate an expanded vocabulary
- Demonstrate increased cultural awareness

Prereq. SPA 112

3 Credits

3 Weekly Lecture Hours

SPA 212 Spanish for Native and Heritage Speakers I

This is the first course of a two-semester sequence designed for students for whom Spanish is their native or heritage language or for those who have a similar proficiency level. The course will build upon the language skills the native/heritage speaker students already possess, focusing on the development of vocabulary through reading and writing, as well as instruction in proper pronunciation, grammar, spelling, and punctuation. All skills will be emphasized: listening, speaking, reading and writing as to help students increase the quantity and quality of their communication skills. Students will gain understanding of their own culture and that of other Hispanic countries. The instructional language for this course will be Spanish. Technology will be used to enhance the learning process.

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

- Use standard grammar and orthography when communicating in oral and written form.
- Demonstrate receptive proficiency by discussing readings read in and out of class.
- Demonstrate growth in their quantity and quality of production and comprehension by applying learned knowledge in assigned written assignments and/or oral presentations.
- Discuss the culture of the Hispanic countries studied and compare it to their own and that of the U.S.A.

This course is designed for students for whom Spanish is their native or heritage language. It is also appropriate for those who have had previous exposure to the language, and function at a similar level of proficiency as a native or heritage speaker.

Students must be a native or heritage speaker of Spanish or have permission of the instructor.

3 Credits

3 Weekly Lecture Hours

(SWO) Social Work

SWO 101 Introduction to Social Work and 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

SWO 201 Domestic Violence

This course is a one semester overview of the complexities underlying domestic violence in America, with a particular focus on Pennsylvania. Experts define domestic violence as behavioral patterns that are purposeful, often violent and used to maintain power and control over an intimate partner. Students will examine the historic and cultural context and expanded definition of domestic violence along with the current best practices to prevent and eliminate this problem. This course is designed to enhance the knowledge of students interested in the field of human services as they critically evaluate the complex overlapping of family dynamics, work place concerns and other social problems with the impact of physical, sexual, emotional, economic and psychological abuse. Special attention will be paid to the current best practices designed to assist children, individuals, families and communities with the goals of safety and self-determination.

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

- Define domestic violence, the cycle of violence and related concepts
- Identify and explain the roles of the perpetrator, victim and bystander
- Describe the support/benefits and limitations of the current legal and police responses to domestic violence incidents
- Identify governmental and social service agencies available to assist victims, perpetrators and bystanders
- Describe the structure, content and limitations of a professional helping relationship
- Identify local agencies and models of strength-based interventions and treatment practices
- Demonstrate how knowledge of oppression, privilege, 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
- Evaluate the ethical dilemmas surrounding the concept of self-determination and mandated-treatment as these relate to people who experience domestic violence
- Identify the emotional and physical symptoms and causes of professional burnout along with the methods designed to prevent it

Prereq. ENG 100, PSY 100

3 Credits

3 Weekly Lecture Hours

SWO 210 Human Behavior and the Social Environment I

This course focuses on the internal and external variables that influence human development across the lifespan. Students will study the range of social systems in which people live, describe empirically-based knowledge of human behavior in the social environment, identify concepts, assumptions and critiques of developmental theories and assess the level of impact that diversity and socio-economic levels have on human development. In addition to exploring bio-psycho-so-

cial theories students will utilize social work conceptual frameworks to guide evaluation of existing case studies, programs, and interventions. Various constructs from the Social Work profession will be utilized throughout the course. These include but are not limited to: bio-psycho-social, Person in Environment (PIE), strengths-perspective, Problem Solving Process/Generalist Intervention Model, NASW Code of Ethics and systems theory. This course is a required course for the DCCC, Associate in Arts Degree in Social Work.

Students who are planning to transfer to a 4-year institution and complete a Bachelor of Social Work degree (BSW) are advised to plan early for transfer and meet with an advisor and transfer specialist.

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

- Describe, compare and contrast empirically-based theories of human behavior in the social environment throughout the lifespan, including: the Person in Environment Perspective, strengths-perspective, Problem Solving Process/Generalist Intervention Model, NASW Code of Ethics, systems theory and bio-psycho-social contexts.
- Demonstrate beginning knowledge of the various aspects of diversity and socio-economic levels that impact human development and behavior, including their own, by identifying concepts, assumptions and critiques of developmental theories related to all stages of life.
- Assess client functioning within the social environment from various perspective, including the eco-system perspectives and explain how social institutions impact a client's functioning in the dynamic environment over the lifespan.
- Evaluate results from a client case study, published within an academic Social Work textbook or journal (or related discipline), by applying the theories presented in this course to the case study and describe the individuals functioning from an eco-systems perspective and how the interventions were used to support the client.
- Identify concepts, assumptions and critiques of developmental theories related to the stages of life across the lifespan.
- Utilize technology to access information.

Prereq. SWO/HUS101, PSY 140, SOC 110, ENG 100

3 Credits

3 Weekly Lecture Hours

SWO 220 Social Welfare Policy

This course is designed to prepare the beginning social work practitioner with an awareness of the range and complexity of problems addressed by the social welfare system. Students will gain knowledge of the historical development of social welfare programs, in the United States, and the evolution of these programs over time. Students will identify and examine their own attitudes and values toward social issues. Knowledge of the social work profession and its' contributions to social policy development will be also examined within this framework. This course supports the introductory competencies of one of the four major-specific content areas of the TOAC-PA agreement for transfer and is a required course for the Associate of Arts in Social Work degree at Delaware County Community College.

Students who are planning to transfer to a 4 year institution and complete a Bachelor of Social Work degree (BSW) are advised to plan early for transfer and meet with an advisor and transfer specialist.

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

- Demonstrate an understanding of the concept that the present social welfare system is a product of historical forces.
- Develop an understanding of the history of social work as a profession and identify its values associated with social issues and related social policies.
- Identify key existing social problems as they relate to vulnerable populations.
- Demonstrate an awareness of how society has chosen to cope with and resolve a current social problem.
- Identify, discuss and analyze key societal components and systems that have supported the systematic devaluation and discrimination toward certain groups in our society.

- Examine one's own attitudes and values as they relate to social issues.
- Articulate directives from the Social Work Code of Ethics which relate to social issues and social welfare policies.
- Explain what is meant by the Statement, "policy directs practice".
- Explain how poverty is defined and measured in the U.S.

Prereq. SWO 101/HUS 101, PSY 140, SOC 110, ENG 100
3 Credits **3 Weekly Lecture Hours**

(TCC) Technology Dept. Core

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 effects 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 and REA 050

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 **2 Weekly Lecture Hours**
2 Weekly Laboratory 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 which 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.

Basic computer skills
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 set-up criteria and represent the conceptual aspects of views for a two-dimensional drawing.
- Use various input devices, display, drawing and plotter commands to satisfy 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 drawing composition and development for plotting scaled views in various viewport configurations.
- Create two-dimensional engineering charts, graphs and tables.
- Develop User Coordinate Systems to facilitate drafting of intermediate through advanced drawing 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 TME 210

3 Credits **1 Weekly Lecture Hour**
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:

- Assume the responsibilities and authority of the supervisor's position.
- 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.

Prereq. ENG 100 and REA 100

3 Credits

3 Weekly Lecture Hours

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 prepare the student to participate in the CPA processes for project phasing 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

Prereq. ENG 050 and REA 050

3 Credits

3 Weekly Lecture Hours

TCS 111 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 sitework and excavation techniques and proceed through basic building systems in concrete, masonry, wood, plastic and metal. 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 100

3 Credits

3 Weekly Lecture Hours

TCS 112 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 131 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, TCC 111

3 Credits

3 Weekly Lecture Hours

TCS 132 Estimating II

A continuation of Estimating I. This occurs is a laboratory presentation utilizing all acquired knowledge to compile essential data for an actual estimate.

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

2 Weekly Laboratory 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 record-keeping 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

2 Weekly Laboratory 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. MAT 110 Coreq. TCC 122

3 Credits

2 Weekly Lecture Hours

3 Weekly Laboratory Hours

TDD 203 Kinematics

This course provides an introduction to mechanisms used for transmitting forces, controlling position, determining 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

3 Credits

2 Weekly Lecture Hours
3 Weekly Laboratory Hours

TDD 216 Three Dimensional CADD

This course provides instruction in advanced computer-aided design and drafting (CADD) techniques in addition to creation of three-dimensional drawings. Students progress from two-dimensional projection to wireframe, surface modeling, solids modeling and rendering techniques. Emphasis will be placed on maximizing a personal computer-based CADD system to develop a series of increasingly difficult drafting assignments and ending with a presentation quality final project and portfolio of completed drawings.

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

3 Credits

2 Weekly Lecture Hours
2 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.
- Operate the display controls including WINDOW, PAN and other drawing and screen control commands to satisfy the specific requirements of the drafting assignment.
- Modify and correct drawings using the edit commands.
- Provide dimensions, notes, bills of materials and other text on drawings as necessary to satisfy the information requirements of manufacturing or construction.
- Use drawing libraries composed of standard shapes and components, or previously prepared drawings to insert desired information and entities in current drawings.
- Plan, lay out and complete the necessary drawings to describe a design, manufacturing or construction project selected by the student as an individual or as a member of a planning group.
- Save (on disk) and plot drawings produced with the micro-computer-based systems.

Prereq. TDD 124 or ARC 100

3 Credits

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, hatches, 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) Electronics Technology**TEL 101 D C 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 electric 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.
- Understanding of Basic algebra

4 Credits

3 Weekly Lecture Hours
2 Weekly Laboratory Hours

TEL 102 A C 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 are 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 from phasor back to time domain.
- Analyze currents and voltages in RL, RC, RLC circuits using phasors.
- Use PSPICE 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 110 or MAT 151

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. Biopolar 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 biopolar 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 timers 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 covers the basics 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 micro-computer 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.
- Describe various methods of modifying analog output signals of devices using amplification and filtering.
- Describe various methods of modifying digital output signals of devices using digital techniques and devices including analog-digital/digital-analog converters. Describe various feedback techniques (from detection, modification and control) used to control various processes.
- Develop skills to troubleshoot input sensors, output devices and controllers.
- Be able to use various test equipment to localize probable faults in a control system.

Prereq. TEL 110

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

TEL 202 Biomedical Instrumentation

This course provides a perspective on the essential aspects of biomedical equipment. It covers practical matters such as operation, calibration, maintenance and troubleshooting of medical equipment. Topics covered by this course include an overview of the human body, the heart and the circulatory system. It also covers electrodes and transducers, bioelectric amplifiers, electrocardiographs, intensive care units, electro-optics, computers in biomedical equipment and electrical safety in the medical environment. Experiments are performed in conjunction with all major topics to reinforce theory.

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

- Define major systems, characteristics and principle functions of the human body.
- Describe the characteristics and properties of electrodes, transducers and bioelectric amplifiers.
- Describe the fundamentals and properties of electro-cardiographs, the intensive care unit and operating rooms.
- Define electrical safety as applied to medical institutions.
- Define the characteristics and the properties of electro-optics in the biomedical field.
- Describe the operation and the characteristics of computers used in Biomedical Equipment.

Prereq. TEL 110 Coreq. TEL 111

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

TEL 210 Troubleshooting and Repair

This course is an applied course in Electronics, which aims to provide the student with clear and concise instruction on how to repair consumer electronic equipment. Students will discuss the operation of basic electronic systems such as amplifiers, power supplies, stereo receivers and CD players. Schematic diagrams and block diagrams will be studied for call type of device. The techniques utilized in this course are universally applicable in all types of electronic equipment regardless of their application. Theory and applications acquired in prerequisite electronic courses will be applied to Troubleshooting and Repair.

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

- Define safety procedures for troubleshooting electronic equipment
- Demonstrate a process for finding fault in electronic circuits
- Demonstrate the techniques used to locate various faults in a basic guide amplifier system
- Demonstrate the ability to solder and desolder components in a PC board
- Analyze and define the operation of a basic split DC power supply
- 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 applications 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

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 photoresist for liftoff 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 BPSG 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 Coreq. 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 nanostructures 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 microfluid 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. Lastly, 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 overflow in 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 301 Basic Telecommunications

This course presents an overall view of the telecommunication industry with emphasis on the systems approach. Seven major areas are discussed: basic telecommunication, television, the telephone system, satellite communication, fiber optics, fiber-optic systems and cellular radio.

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

- Discuss the Federal Communication Commission (FCC) and the scope of their justification.
- Describe telecommunication systems and network.
- Discuss the services of the telecommunication industry.
- Discuss the telephone system.
- Discuss the future of the telecommunication industry.

Prereq. TEL 110

3 Credits

3 Weekly Lecture Hours

TEL 302 Radio Frequency Communication Systems

RF communications, noise and special communication circuits are introduced first. Various modulation techniques are then discussed in depth. 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 polymetric materials, plastics, polymeric coatings and adhesives.
- Determine the various applications of ceramics
- Determine the heat-treatment sequence of steel.
- Determine the properties and use of stainless steel, copper, aluminum, nickel, zinc, titanium, magnesium and refractory metals.
- Select welding processes according to joint configuration and weldability.
- Identify the structure of a composite.
- Determine the purposes and applications of composites.

3 Credits

3 Weekly Lecture Hours

TME 111 Machining Technology

This course provides an introduction to the knowledge and skills associated with various conventional chip making machine tools their design, application, set-up and operation. Theory and mathematical concepts and calculations associated with inspection techniques, tapers, digital readout quantifications, speeds, feeds, torque, horsepower, threading, indexing and unit cycle time determination will be covered. Emphasis will be placed on tooling and work holding requirements, and set-up and cutting tool materials (H.S.S., carbide, ceramic and diamond) selection. Additional topics include: an introduction to process planning, quality control charting - Statistical Process Control (SPC) techniques, and Geometric Dimensioning and Tolerancing (GD&T).

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

- Describe and perform practices and procedures required to safely complete operations involving cutoff and contour saws, drill presses, vertical and horizontal milling machines, engine lathes, pedestal and surface grinders.

- Identify the basic principles and terms associated with the interpretation of drawings for the manufacture and inspection of parts, with an emphasis on Geometric Dimensioning and Tolerancing.
- Implement various aspects of design, planning and organization for the production of manufactured parts.
- Discuss, in general terms, the nature, properties and types of materials used to produce manufactured parts.
- Refer to manufacturers' catalogs and the theory of cutting tools to determine the application and the identification of appropriate cutting tool holders, adapters, cutters and inserts, and to develop a machining operation plan, including set-up and job sheets.
- Perform algebraic and trigonometric computations associated with the manufacture of piece-parts to include speeds and feeds, tapers, threads and indexing; and other mathematical calculations related to various machining parameters, machine selection, set-up and inspection of piece-parts.
- Utilize engineering drawings and precision instruments to produce parts on machine tools, to include cut-off and contour saws, drill press, vertical and horizontal milling machines, engine lathe, pedestal and surface grinders.
- Describe, in basic terms, the various considerations associated with special purpose machines, processes, mass production, hard and soft automation, and assembly techniques.

Coreq. TGC 112 and MAT 110

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

TME 115 Basic Technical Skills

This course is designed to provide the student with the theory and experience necessary to appropriately plan, organize, and perform typical introductory job assignments of an engineering technician, mechanic, or helper. Instruction will provide baseline coverage of a variety of technical topics in a cross-discipline manner. Specific subject matter deals with the manual operation of equipment as well as the use of hand and power tools. An introduction to fire prevention and safety, oxy-fuel heating and cutting, general layout and precision measuring instruments, electrical testing, basic rigging equipment and practices, as well as the use of leveling devices for rise/run calculations (required of equipment installation/set-up and leveling applications) will be covered. Instruction will include appropriate levels of associated processes required to safely perform layout, fire prevention, fabrication and inspection, installation, repair/replacement/ introduction start-up/operational procedures for a basic steam generator system, and plant equipment.

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

- Apply basic accident-prevention practices and procedures relative to personal protection, start-up and operation of electrical/mechanical/steam producing equipment, to include an introduction to fire extinguishers and lock-out and tag-out procedures.
- Interpret sketches, drawings and schematics, and perform basic layout practices for the fabrication of piece-parts, and the installation and assembly of equipment.
- Use English and Metric rules, micrometers, vernier calipers, dial indicators and other instruments to make accurate measurements and layouts.
- Demonstrate the skills and knowledge required to utilize common hand tools, and power driven hand tools, as well as a drill press, a cut-off saw, and a sander.
- Perform basic electrical measurements, using analog and digital voltage/ohm/ampere meters and devices.
- Utilize basic jointing procedures to connect/disconnect fasteners and mechanically fastened electrical terminals, as well as PVC, copper, pneumatic and hydraulic tubing joints and connections.
- Conduct basic flame heating, bending, and cutting assignments.
- Complete basic (small payload) rigging and equipment moving procedures.

- Relate aspects of thermal science theory and allied phenomena associated with heat generating equipment and systems.
- Describe basic safety requirements, operational components (at an introductory level) and discussed the operational aspects of a basis steam generation systems.
- Present (appropriate for this course) technical information concisely and accurately.

Coreqs. Mathematics for Occupational Technologies, MTT 108 or Technical Mathematics, MAT 110.

Prereq. MTT 108 or MAT 110

3 Credits

**1 Weekly Lecture Hour
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

3 Credits

**2 Weekly Lecture Hours
2 Weekly Laboratory Hours**

TME 212 Computer Aided Machining

This course provides students with an introduction to off-line programming of Computerized Numerically Controlled (CNC) machine tools via the use of Computer Aided Machining (CAM) software. Emphasis is placed on becoming comfortable and productive with a CAM system operated as an automated process modeling tool. Fundamental concepts terminology and applications are stressed, as is the use of interactive software modules for modeling CNC operations. Topics include an introduction to the computer/plotter/printer as a work station, an overview of graphics modeling concepts, the application's Graphical User Interface (GUI) and a thorough familiarization of selected icons and definitions. Generalized and specific activities associated with introductory computer-aided drafting (CAD)/CAM operations, job planning, piece-part geometry/tool path definition and

part modeling will be covered. An introduction to workplanes and MACROS, as well as CNC code generation and machine communications, will be addressed. Milling and turning (with a minor emphasis on fabrication) operations will be stressed. Process modeling software packages for production milling and turning will be used as vehicles of instruction for this course.

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

- Develop the concepts necessary for interpretation and conversion of part drawings into proceduralized manufacturing process/operation, tooling sheets and job plans.
- Use computer software and hardware (including peripherals) to interactively create, edit and communicate job plans (to include tooling/operational information), CAM generated drawings and machine code files.
- Demonstrate a basic ability to transfer (and manipulate) 2D CAD/CAM design data for use in piece-part process modeling and experimentation.
- Formulate necessary logic (object/action techniques) and demonstrate knowledge of the software module's capabilities to define, create and edit drawings, and tool path elements using freeform and continuous part profile and surface creation techniques.
- Complete activities associated with the verification of tool path motion, and for the creation of machine ready code, for piece-part production.
- Utilize advanced software features to describe, manipulate and perform repetitive tasks associated with the creation of a manufacturing process model.
- Conduct part program origin and workplane/transformations.

Prereq. TME 111 Coreq. TCC 112

3 Credits

**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 100

4 Credits

**3 Weekly Lecture Hours
2 Weekly Laboratory Hours**

TME 220 Robotics and Programmable Controls

This course provides an introduction to the field of robotics. The specific types of industrial robots their function and mode of operation will be addressed. The impact that programmable automation and the application of robotics is having on the worker, the workplace and on production planning will be discussed. Actuation and operational characteristics of robots will also be covered. A study of sensor and automation applications will be included.

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

- Discuss the effects that automation technology and industrial robots have on employers, employees and society in general.

- Describe the basic structure and mechanical configuration as well as the functional characteristics of various types of robots.
- Compare and contrast robotic/automated control systems.
- List the end-of-arm-tooling characteristics available to the production planner.
- Develop a list of accident prevention practices and procedures, and maintenance requirements for robotic work-cell operations.
- Explain the aspects of flexible applications inherent to a robot.
- Define the areas in manufacturing conducive to the utilization of robots.
- Describe the operation of a PLC and prepare programs to effect automatic control of processes.

Coreq. TME 229

3 Credits

**2 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-cutting (cold), 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 turning operations.
- Apply appropriate techniques for modeling mill/turn operations and for creating machine tool code.
- Plan, develop, edit and execute macros for family- of-parts operations.

Prereq. TME 212

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

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, conductors, 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 electromechanical 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, conductors, 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.

Prereq. PHY 100 Coreq. MAT 111, TME 220

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

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

Prereqs. MAT 110 and PHY 100

4 Credits

3 Weekly Lecture Hours

2 Weekly Laboratory Hours

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.

Prereq. TME 220

3 Credits

2 Weekly Lecture Hours

2 Weekly Laboratory Hours

TME 290 Fluid Mechanics

3 Credits 3 Weekly Lecture Hours

(WLD) Welding

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 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.

2 Credits

1 Weekly Lecture Hour

2 Weekly Laboratory Hours

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 flare.
- Use an oxy-fuel cutting torch.

2 Credits

1 Weekly Lecture Hour

2 Weekly Laboratory Hours

WLD 102 Oxy-Fuel Welding

This course provides instruction in welding of mill 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, students should be able to:

- Utilize correct method of welding mill steel.
- Cite the effects of flame on metal.
- Demonstrate ability to weld a variety of joints in any position

Prereq. WLD 101

2 Credits

1 Weekly Lecture Hour

2 Weekly Laboratory Hours

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.

2 Credits

1 Weekly Lecture Hour

2 Weekly Laboratory Hours

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.

Prereq. WLD 103

2 Credits

1 Weekly Lecture Hour

2 Weekly Laboratory Hours

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, students should be able to:

- Detail various joint designs.
- Identify joint designs.
- Weld joints from designs.
- Weld in various positions using E7018 and E8018 electrodes.

Prereq. WLD 104

2 Credits

1 Weekly Lecture Hour

2 Weekly Laboratory Hours

WLD 106 Intermediate Shielded Metal Arc Welding II

This course continues the theory covered in Intermediate SMAW I. 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 Hour
2 Weekly Laboratory Hours**

WLD 150 Welding Design

This course emphasizes the use of basic drafting skills for lay out of plate steel 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 Hour
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.

2 Credits

**1 Weekly Lecture Hour
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 Hour
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 Hour
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 Hour
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 1F, 2F and IG positions using the globular metal transfer method.
- Perform welds in the 1F and IG positions using the axial spray metal transfer method.

2 Credits

**1 Weekly Lecture Hour
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.
- Work with A.S.M.E., A.S.T.M. and A.P.I. codes.
- Weld with E6010 on heavy plate in all positions.

Prereq. WLD 106

2 Credits

**1 Weekly Lecture Hour
2 Weekly Laboratory Hours**

WLD 203 Advanced Shielded Arc II

Students practice all positions, applications and weldments to the specifications of A.W.S., A.S.M.E., A S.T.M. and A.P.I. codes. Also covered is blueprint reading for welding and its uses. Students test welds using non-destructive tests.

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

- Weld in all positions using a variety of electrodes.
- Weld in accordance with A.W.S., A S.M.E., A S.T.M. and A.P.I. specifications.
- Interpret welding blueprints.
- Perform non-destructive testing procedures.

Prereq. WLD 202

2 Credits

**1 Weekly Lecture Hour
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 Hour
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 Hour
2 Weekly Laboratory Hours**

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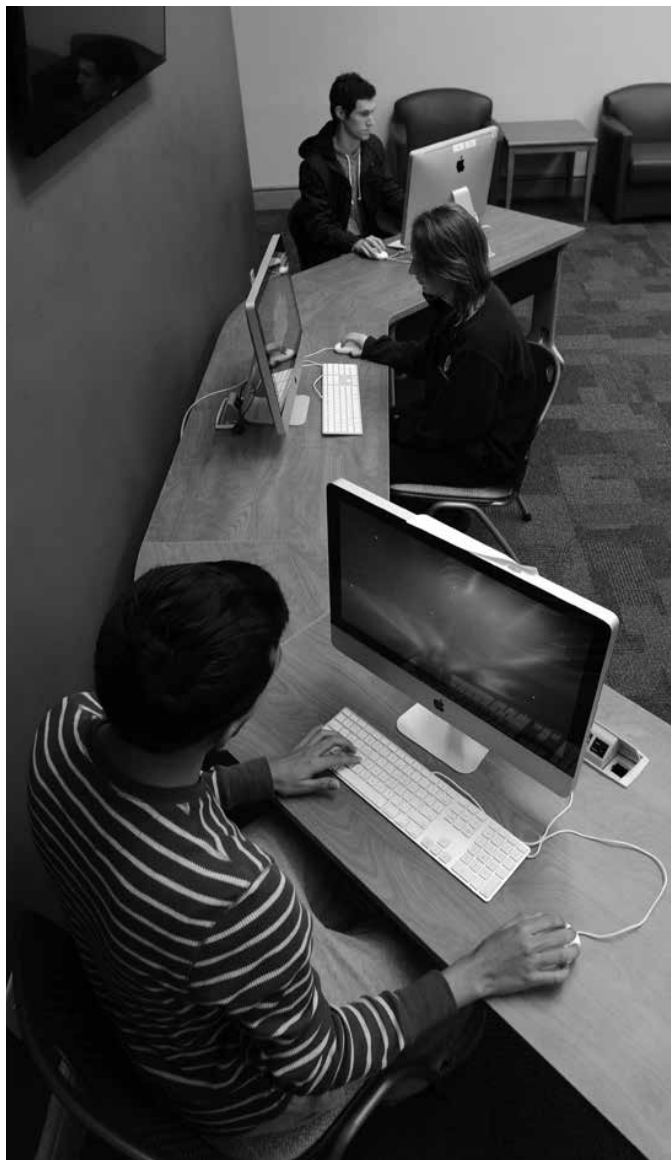
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