CATALOG EXTRACT - COURSE DESCRIPTIONS ONLY

Delaware County Community College

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.

Content current as of June 2021. All changes effective for Fall 2021.

Accreditation

Delaware County Community College is accredited by the

Middle States Commission on Higher Education
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Catalog

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 As with any printed document of this nature, however, its currency becomes outdated quickly as faculty routinely update programs and courses to reflect the changing content and standards in any given field of knowledge.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 listing of courses and programs. The material within this catalog is subject to change and was current as of June 2021.

Course Descriptions

A

- ACC - Accounting (p. 3)
- ADJ - Administration of Justice (p. 5)
- AHA - Health Administration (p. 10)
- AHM - Allied Health Medical (p. 10)
- AHN - Allied Health Nursing (p. 17)
- AHS - Surgical Technology (p. 18)
- ARB - Arabic (p. 20)
- ARC - Architecture (p. 20)
- ART - Art (p. 21)
- AUT - Auto Mechanics (p. 31)

B

- BIO - Biology (p. 38)
- BUS - Business (p. 43)

C

- CHE - Chemistry (p. 49)
- COMM - Communication Studies (p. 51)
- CPT - Carpentry (p. 55)
- CS - Computer Science (p. 58)
- CUL - Culinary Arts (p. 61)

D

- DPR - Computer Information Systems (p. 64)
- DRA - Drama (p. 72)

E

- ECE - Early Childhood Education (p. 74)
- ECO - Economics (p. 79)
- EDU - Education (p. 80)
- EGR - Engineering (p. 83)
- EGY - Energy Technology (p. 86)
- ELT - Electrical Occupations (p. 88)
- EMER - Emergency Management and Planning (p. 93)
- EMS - Emergency Med Services (p. 94)
- EMTP - EMT Paramedic (p. 94)
- ENG - English (p. 98)
- ESL - English as a Second Language (p. 103)
- ESS - Earth & Space Science (p. 106)

F

- FRE - French (p. 107)
- FST - Fire Science Technology (p. 107)

G

- GER - German (p. 108)

H

- HIS - History (p. 109)
- HRM - Hotel/Restaurant Management (p. 113)
- HUM - Humanities (p. 115)
- HUS - Human Services (p. 119)
- HVA - Heating Ventilation & AC (p. 120)

I

- IMM - Interactive Multimedia (p. 125)
- INT - Interdisciplinary (p. 126)
- IST - Industrial Systems (p. 126)
- ITA - Italian (p. 130)

M

- MAT - Mathematics (p. 130)
- MPT - Municipal Police Training (p. 135)
- MTT - Machine Tool Technology (p. 138)
- MUS - Music (p. 145)

N

- NDT - Neurodiagnostic Technology (p. 148)
- NET - Network Engineering (p. 151)
- NUS - Nursing (p. 153)

O

- OCS - Occupational Studies (p. 158)

P

- PCT - Process Control Technology (p. 159)
- PHI - Philosophy (p. 163)
- PHY - Physics (p. 164)
- PLB - Plumbing (p. 165)
- PLG - Paralegal Studies (p. 171)
- POL - Political Science (p. 176)
- PSY - Psychology (p. 177)

R

- REA - Reading (p. 183)
- RTH - Respiratory Therapy (p. 183)

S

- SCI - Science (p. 186)
- SOC - Sociology (p. 188)
- SPA - Spanish (p. 191)
- SWO - Social Work (p. 193)

T

- TCC - Technology Dept. Core (p. 195)
- TCS - Construction Technology (p. 196)
- TDD - Drafting/Design Tech (p. 199)
- TEC - Technologies (p. 202)
- TEL - Electronics Technology (p. 203)
- TME - Mechanical Technology (p. 209)
- TSC - Trauma Studies (p. 214)

W

- WLD - Welding (p. 215)

Course Numbering System

Course Numbering System

- A subject 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. Consult with your advisor if you believe you have met the prerequisite at another institution.
- 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
Corequisites: MATH 105 or BUS 104.
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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 060 or MAT 050). Appropriate placement test scores may be accepted.
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.
Prerequisites: 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.
Prerequisites: (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.
Prerequisites: ACC 100 or ACC 111.
3 Credits 3 Weekly Lecture Hours

ACC 202 Introduction to Tax Accounting
The primary objective of this course is to gain a practical understanding of the personal income tax, various payroll taxes and the Pennsylvania sales tax. Students will demonstrate an understanding of these taxes by making appropriate calculations and preparing current tax forms. This is a required course for students 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 successful completion of this course, students should be able to:
Discuss the history and objectives of the US 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 US 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.
Prerequisites: ACC 111.
3 Credits 3 Weekly Lecture Hours

ACC 251 Intermediate Accounting I
This course is a comprehensive study of contemporary accounting theory, concepts, and procedures and their application to financial reporting. Intermediate problems pertaining to cash, receivables, inventories, plant and equipment, and investments in securities are presented. Understanding of the concepts covered in this course is crucial to successfully completion of all subsequent financial accounting and courses in the accounting sequence.
Upon successful completion of this course, students should be able to:
Discuss the need for a conceptual framework for accounting.
Explain the importance of recognizing, measuring and reporting income and the content, purposes and limitations of a balance sheet.
Define cash and identify those items that are properly classified as cash.
Describe and apply generally accepted accounting principles for temporary and long-term investments.
Discuss issues involved in valuation and reporting of accounts and notes receivable.
Describe and explain the nature of inventories, the accounting for inventories, and effect of inventory accounting alternatives on the financial statements.
Distinguish between tangible and intangible assets, and understand the types of problems and related solutions involved in recording the acquisition, utilization and retirement of real property, equipment and intangible assets.
Prerequisites: 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 leasee and leasor.
Identify and describe the objectives and limitations of the cash flows statement.
Discuss the objectives and the methods of financial statement analysis.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: ACC 252.
3 Credits 3 Weekly Lecture Hours

ADJ - Administration 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 US Constitution to the Criminal Justice System.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: ADJ 101.
3 Credits 3 Weekly Lecture Hours

ADJ 190 Administration of Justice Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
1 Credit

ADJ 194 Administration of Justice Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. NOTE: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
2 Credits

ADJ 199 Administration of Justice Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. NOTE: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
3 Credits 3 Weekly Lecture Hours

ADJ 202 Terrorism
This course is designed to provide students with an understanding of international and domestic terrorism. It will examine the social, political, religious and global issues of terrorism. It will also provide students with the methods and strategies of various terrorist groups as well as the impact of terrorism on US Law Enforcement agencies, the US Court System, and the international community.
Upon successful completion of this course, students should be able to:
Summarize the various definitions and typologies of both international and domestic terrorism.
Examine the major historical and political causes of terrorism.
Identify the major international and domestic terrorist organizations.
Outline the major reasons why the US has become a target of terrorism.
Describe the global impact of terrorism on social, economic, and political levels.
Explain strategies and the tactics utilized by Law Enforcement and the international community in response to terrorism.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: 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.
Prerequisites: 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.
Identify personal beliefs as a source of 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.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: ADJ 101 and ENG 100.
3 Credits 3 Weekly Lecture Hours

ADJ 250 Policing in America
This course is designed to provide students with an understanding of the history and evolution of policing in the United States. It will provide students with a view of police power at the federal, state and local levels of law enforcement and will focus on contemporary issues in policing including administration and management, policing in democracy, and community policing within the confines of existing laws. It will address officer training, use of force, investigative methods, police discretion, and corruption.
Upon successful completion of this course, students should be able to:
Discuss the historical development of policing in America.
Understand the limits of police power in the United States.
Recognize the varying responsibilities of the police at the federal, state, and local levels of law enforcement.
Analyze the role of community policing, its strengths and limitations.
Demonstrate critical thinking on issues of social diversity in policing in America.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: 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 US courts.
List the most common functions of US 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.
Prerequisites: 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.
Prerequisites: ADJ 241.
3 Credits 3 Weekly Lecture Hours

AHA - Health Administration

AHA 206 Reimbursement and Financing in Managed Care
Health care is the largest service industry in the United States. Healthcare 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 fully understand current financial trends in reimbursement for services provided. This course provides information on the impact of various forces on the financing of healthcare. It also explores reimbursement trends and issues from the perspective of providers, payers, and consumers of health. Special focus in this course is on managed care impact on reimbursements.
Upon successful completion of this course, students should be able to:
Use correct terminology in discussing the financial aspects of health care.
Develop a format for capital budget planning.
Formulate a budget request.
Identify the implications of managed competition and global budgeting on reimbursement initiatives.
Analyze the impact of health care reform and changed governmental 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.
Prerequisites: AHA 209 and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
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 healthcare system and has changed the delivery of healthcare services. Individuals working in the healthcare 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. The roles and responsibilities of the case manager will be investigated as well. The topic of Utilization Review will also be introduced in this course. It is essential for healthcare 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 heatlhcare services. Managed care and Utilization Review are tools to coordinate and measure the delivery of cost effective quality care and have the potential to achieve significant containment of healthcare costs, an essential outcome in our present health care system.
Upon successful completion of this course, students should be able to:
Describe key concepts of the philosophy of managed care.
Explain the shift from the fee-for service model to capitation.
Use the specific terminology related to managed care models.
Identify critical components in developing and implementing treatment plans.
Explain the function of critical pathways and disease management strategies.
Define the roles and responsibilities of the case manager and or healthcare provider in client advocacy and ethical decision making.
Trace the history and development of the utilization review processes.
Describe the requirements for utilization review procedures in relation to payer organizations, Managed Care, Medicare, Medical Assistance and private insurers.
Examine the role of physician and other health care personnel in resource management.
List the various mechanisms used in the resource management process by payer and provider organizations.
Discuss the role of the health care manager in the utilization review process.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060) and AHA 207 and AHM 102 and AHM 233. Appropriate placement test scores may be accepted.
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 confidentially 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 and 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.
NOTE: College Academic Learning Goal Designation: Scientific Inquiry (SI) when taken with AHM 105 and AHM 220
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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Corequisites: AHM 233.
3 Credits 3 Weekly Lecture Hours

AHM 105 Body Structure and 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.
NOTE: College Academic Learning Goal Designation: Scientific Inquiry (SI) when taken with AHM 104 and AHM 220
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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Corequisites: 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.
Perform the duties necessary to assist 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 setting. 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 and other cardiac tests.
Describe the role of the Medical Assistant in assisting with therapeutic modalities, rehabilitative procedures, orthopedic medicine and physical therapy.
Evaluate the role of the Medical Assistant during a medical emergency and in preparing for an emergency situation.
Prerequisites: AHM 106.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

AHM 109 Medical Assistant Review Practicum I
This course is structured to provide the student with a review of the 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.
Prerequisites: AHM 106.
1 Credit
2 Weekly Lab 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, students should 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.
Prerequisites: AHM 106 and AHM 107.
1 Credit
2 Weekly Lab Hours

AHM 130 Medical Coding Concepts for Allied Health
This course, for non-coding majors, is designed to teach students general principles of ICD-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.
Prerequisites: 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, students 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.
Prerequisites: AHM 233 and DPR 100.
4 Credits 3.5 Weekly Lecture Hours
1 Weekly Lab Hour

AHM 198 Medical Coding Internship
Selected medical coding experiences are provided in a healthcare facility or insurance company. Knowledge and guidelines basic to applying correct coding systems for appropriate reimbursement are stressed. NOTE: All certificate program requirements in the Medical Coding or Medical Coding for the Healthcare Professional must be completed before taking this course.
Upon successful completion of this course, students should be able to:
Maintain ethical and legal standards of a Medical Coding ProfessionalDemonstrate the ability to use computer applications and technology relating to Medical Billing and Coding.
Interpret and evaluate data in the Electronic Medical Record while searching for deficiencies in demographic and/or insurance information.
Apply correct coding systems for appropriate reimbursement.
Evaluate coding procedures for achievement of optimal quality in seeking appropriate reimbursement.
Create a portfolio to demonstrate professional skills to enhance marketability for employment.
3 Credits

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 Lab 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.
Prerequisites: 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.
Prerequisites: AHM 233 and (AHM 104 or AHM 105 or BIO 150).
4 Credits 4 Weekly Lecture Hours

AHM 220 Applied Microbiology
This is a survey course intended for allied health majors. This 1 credit course contains microbiological information and skills needed for the allied health professions. This course differs from a traditional 4 credit microbiology course in that the 4 credit course emphasizes general microbiology for science majors, whereas the 1 credit applied microbiology course emphasizes concepts for students entering health professions. 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. NOTE: College Academic Learning Goal Designation: Scientific Inquiry (SI) when taken with AHM 104 and AHM 105
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.
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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
1 Credit 0.67 Weekly Lecture Hours
0.33 Weekly Lab Hours

AHM 231 Introduction to CPT Coding
The primary focus of this course is to provide students the principles, guidelines and application of The Current Procedural Terminology (CPT) 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. In addition, students will be introduced to Procedural groupings such as APCs (Ambulatory Payment Classifications) and RUGs (Resource Utilization Groups). This course also addresses reimbursement and compliance issues related to physician-based coding as well as the purpose and application of the CMS (Center for Medicare and Medicaid Services Healthcare Common Procedural Coding System (HCPCS).
Upon successful completion of this course, students should be able to:
Define terms, phrases and abbreviations related to medical coding.
Apply specific volumes of Current Procedural Terminology (CPT) and Healthcare Common Procedural Coding Systems as they pertain to the identification of procedures, medications and medical equipment in healthcare facilities.
Apply Current Procedural Terminology (CPT) coding as they pertain to identification of procedures, medications, and medical equipment in a variety of medical specialties, including but not limited to: Evaluation and Management Coding, Surgery Coding, Pathology and Laboratory Coding, and Radiology coding.
Describe insurance carrier reimbursement systems, such as APCs, RUGs, Outpatient Prospective Payment System (OPPS), Fee-For-Service Payments and Capitation payments.
Apply legal concepts to issues of medical coding.
Prerequisites: (AHM 104 and AHM 105 and AHM 233) or (BIO 150 and BIO 151 and AHM 233).
3 Credits 3 Weekly Lecture Hours

AHM 232 Advanced CPT Coding
This course is designed for students who plan to work in the variety of healthcare facilities in departments including medical records, medical coding, medical billing, or other reimbursement and documentation departments. 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 CMS Healthcare Common Procedural Coding System (HCPCS) is also addressed. Extensive coding of case studies from various medical specialties will be completed in this course.
Upon successful completion of this course, students should be able to:
Code accurately a medical or surgical operative report, physician office visit (Evaluation and Management) or outpatient procedural case study.
Recognize the economic and ethical implications of coding assignment on reimbursement, and how these are impacted by reimbursement systems such as APC's (Ambulatory Payment Classifications, ASC's (Ambulatory Surgery Center) and RBRVS (Resource Based Relative Value Scale).
Determine if coded data is of optimal quality and evaluate if coded cases require a single code or multiple codes (both CPT and HCPCS codes) as well as analyze sequencing of these codes.
Prerequisites: 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 ICD-10-CM Coding
This course is designed to teach those interested in learning ICD-10-CM 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, textbook class-work, homework activities, and lectures will provide students with hands-on experience in assigning accurate diagnosis codes in ICD-10-CM. NOTE: Students must obtain a grade of "C" or better in this course to successfully complete their program.
Upon successful completion of this course, students should be able to:
Understand the format, convention and chapter specific guidelines to correctly assign ICD-10-CM codes.
Apply general guidelines and chapter specific guidelines to correctly assign ICD-10-CM codes.
Understand the code of ethics for coders.
Prerequisites: AHM 208 and AHM 233 and ((AHM 104 and AHM 105) or (BIO 150 and BIO 151)).
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 Health Information Management (HIM) department of a hospital. It is intended to provide additional in-depth study of inpatient medical record case studies to increase knowledge and skills in ICD-10-CM diagnosis coding. This course will also provide students the opportunities to use and apply ICD-10-PCS coding classification system. Students will learn coding characteristics, conventions and apply guidelines to identify and accurately assign codes to inpatient hospital procedures. NOTE: Students must achieve an overall grade of "C" (70% or above) to receive credit for this course for Allied Health Programs or certificates.
Upon successful completion of this course, students should be able to:
Given a scenario, extract the relevant diagnoses and/or procedures and then accurately and completely code them according to ICD-10-CM guidelines and ICD-10-PCS guidelines.
Apply coding guidelines to accurately code principal diagnoses and procedures to determine the correct diagnosis related group assignments.
Demonstrate the use of ICD-10-CM coding and ICD-10-PCS coding in DRG assignment.
Recognize the economic and ethical implications of coding assignment on reimbursement.
Prerequisites: AHM 239.
3 Credits 3 Weekly Lecture Hours

AHM 241 Revenue Cycle Management and Reimbursement Methodologies
This course is designed for students to learn the general principles of revenue cycle management and reimbursement methodologies. Students will learn how to complete and use insurance claim forms and insurance related forms (referrals, pre-authorizations, registration forms). The class will provide students with hands-on experiences with a variety of insurance related issues as well as compliance strategies and reporting. Reimbursement systems including fee-for-service payments and capitation payments will be covered in detail as well as regulatory guidelines, management of denials of claims and chargemaster maintenance.
Upon successful completion of this course, students should be able to:
Describe legal and ethical issues involved in revenue cycle management and compliance and identifying potential abuse and fraudulent trends through data analysis.
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).
Recognize the economic and ethical implications of coding assignment on reimbursement, and how these are impacted by reimbursement systems such as APC's (Ambulatory Payment Classifications, ASC's (Ambulatory Surgery Center) and RBRVS (Resource Based Relative Value Scale).
Accurately complete referral, preauthorization, registration and encounter forms.
Submit claims in paper and electronic format.
Document billing information using correct medical terminology and perform an internal and external chart audit.
Accurately complete referral, preauthorization, registration forms, encounter forms, EOB (explanation of benefits review and analysis) and ABN forms (Advanced Beneficiary Notices).
and ensure appropriate coding as per CMS (Center for Medicare and Medicaid Guidelines).
Resolve 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 process of how to follow up with insurance companies and patients regarding unpaid bills.
Record changes, payments and adjustments for patient scenarios provided.
Prerequisites: AHM 130 or (AHM 231 and AHM 239).
3 Credits 3 Weekly Lecture Hours

AHM 242 Virtual Professional Practice Experience Capstone Course
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, 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.
Prerequisites: AHM 231 and AHM 232 and AHM 239 and AHM 240 and AHM 241.
3 Credits 1 Weekly Lecture Hour
4 Weekly Lab 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, students 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.
Prerequisites: AHN 100.
4 Credits 2 Weekly Lecture Hours
4 Weekly Lab 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. NOTE Prerequisites: High School diploma or GED. Students must meet DCCC's clinical and physical program requirements and therefore departmental approval is required. INT 100 is strongly encouraged.
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 clients independence and prevents abuseDemonstrate knowledge and applies the principles of basic nutrition to prevent neglect and exploitationIdentify 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.
6 Credits 48 Weekly Lecture Hours
25 Weekly Lab 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.
Prerequisites: AHM 220.
Corequisites: AHS 101 and (AHM 104 or BIO 150).
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. NOTE Prerequisite: Clearance card from College Health Office
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.
Prerequisites: AHM 220.
Corequisites: AHS 100 and (AHM 104 or BIO 150).
5 Credits
10 Weekly Lab 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.
Prerequisites: AHS 100 and AHS 101 and (BIO 150 or AHM 104).
Corequisites: AHS 103 and (BIO 151 or AHM 105).
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.
Prerequisites: AHS 100 and AHS 101 and (BIO 150 or AHM 104).
Corequisites: AHS 102 and (BIO 151 or AHM 105).
6 Credits
12 Weekly Lab 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.
Prerequisites: AHS 102 and AHS 103.
Corequisites: 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.
Prerequisites: AHS 102 and AHS 103.
Corequisites: AHS 200.
6 Credits
24 Weekly Lab 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 successful 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.
Prerequisites: 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 this 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.
Prerequisites: TCS 100.
Corequisites: TCC 122.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: ARC 121.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Prerequisites: Prior technical drawing experience and a basic knowledge of materials and methods of heavy construction.
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.
Prerequisites: ARC 215 and TCS 111.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Corequisites: TCS 112 and (PHY 100 or PHY 107).
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 Lab Hours

ART 110 Art from the Ancient Worlds through the Middle Ages
This course analyzes and evaluates the artistic styles from prehistoric cave art to the fourteenth century in Europe. Painting, sculpture and architecture are studied as both individual works and as active participants in broader political, economic, socio-cultural, historical, and environmental systems. Issues concerning iconography, social and geographic context, and biography will also be a focus of this course.
Upon successful completion of this course, students should be able to:
Identify representative art of a range of geographic and chronological periods, including Prehistoric Europe, Egypt, The Ancient Near East, The Aegean, Greece, Rome, Medieval Europe through the fourteenth century in Europe.
Identify stylistic changes affected by political, economic, socio-cultural, historical, and environmental systems.
Define the technical terms associated with the description of art.
Explain the techniques used in painting, sculpture and architecture of the periods.
Visually analyze and recognize any work(s) from the above periods.
Analyze cultural, political, contectual, and stylistic interdependence between diverse regions studied, including the Ancient Near East Egypt, The Aegean, Greece, Italy and Northern Europe.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

ART 111 Art from the Renaissance through Contemporary Times
This course analyzes and evaluates the artistic styles from the European Renaissance through the twenty first century global art. Painting, sculpture and architecture are studied as both individual works and as active participants in broader political, economic, socio-cultural, historical and environmental systems. Issues concerning iconography, social and geographic context, and biography will also be a focus of this course.
Upon successful completion of this course, students should be able to:
Identify 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 political, economic, socio-cultural, historical and environmental systems.
Interpret biographical data of the individual artists wherever possible.
Visually analyze stylistic differentiation of any work(s) from the above time periods.
Analyze cultural, political, contextual, and stylistic interdependence and differentation between diverse regions studied, including Europe, the Americans, Asia and Africa.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

ART 112 Art From Africa, Asia and Beyond
This course analyzes and evaluates the artistic styles of Asia including Buddhist and Hindu Art from India, Java, China, Korea and Japan. Arts of the Islamic world, Africa, Oceania and of the Americas including Native American Indian will also be analyzed and evaluated. Painting, sculpture and architecture are studied as both individual works and as active participants in broader political, economic, socio-cultural, historical, and environmental systems. Issues concerning iconography, social and geographical context, and biography will also be a focus of this course.
Upon successful completion of this course, students should be able to:
Identify representative art of India, Java, China, Korea, Japan, Islam, Africa, Oceania and the Americas.
Identify stylistic changes affected by political, economic, socio-cultural, historical and environmental systems.
Define the technical terms associated with the description of art.
Explain the techniques used in painting, sculpture and architecture of the periods.
Visually analyze and recognize any work(s) from the above periods.
Analyze cultural, political, contextual and stylistic interdependence and differentiation between diverse regions studied, including India, Java, China, Korea, Japan, Islam, Africa, Oceania and the Americas.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

ART 115 History of Graphic Design
This course analyzes and evaluates the field of graphic design, typography 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. The work examined in each era will be discussed in terms of its aesthetic, socio-cultural, economic, political, historical and environmental systems impact.
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 important historical artists and designers that contributed to the various historic design movements.
Identify aesthetic, economic, historical and environmental changes that affected the visual appearance of the various design movements.
Analyze cultural, political, contextual, and stylistic interdependence and differentiation between the diverse regions studied.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 broader political, economic, socio-cultural, historical, and environmental systems, 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.
Upon successful completion of this course, students should be able to:
Analyze the artistic qualities of photography using major stylistic elements present in all photographs, including such elements as line, balance, depth of field, color and composition.
Discuss the historical development of photography from its scientific and technological perspectives.
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 how photography shaped broader artistic, political, economic, socio-cultural, historical, and environmental systems.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits
5 Weekly Lab 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.
Integrate critical thinking skills through completed artworks and critiques.
Prerequisites: ART 122 or GRA 122.
3 Credits
5 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits
5 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits
5 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ART 130 or GRA 133.
3 Credits
5 Weekly Lab Hours

ART 133 Photography I
This course introduces students to 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.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
3 Credits
5 Weekly Lab 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.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ART 133.
3 Credits
5 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ART 130 or GRA 133.
3 Credits **2 Weekly Lecture Hours**
3 Weekly Lab 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.
Demonstrate the ability to activate the concept of the picture plane.
Produce cohesive composition through the student's direct observation of the subject.
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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 050) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits
5 Weekly Lab 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.
Produce cohesive composition.
Demonstrate the ability to analyze how light creates form with the interplay of hue, value and chroma.
Demonstrate the ability to activate the concept of the picture plane using traditional and non-traditional means.
Manipulate the illusion of three-dimensional forms and space.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ART 140.
3 Credits
5 Weekly Lab Hours

ART 142 Life Drawing
This course will emphasize life drawing from the nude and draped model. The figure will be studied as a singular form and studied as a form within the environment. Drawing with a variety of wet and dry media will be stressed in the course. Demonstration, discussion and formal critiques will augment studio work. NOTE: Pre-Req may be waived by Department.
Upon successful completion of this course, students should be able to:
Demonstrate the ability to draw the human figure utilizing perceptual means incorporation bold, gestural and quick mark-making skills.
Demonstrate the ability to draw the human figure utilizing perceptual means within a sustained pose incorporating properties of line, value, scale and proporation, figure-ground relationship, texture and tone.
Demonstrate the ability to draw the human figure incorporating basic knowledge of human anatomy and art historical connections.
Demonstrate the ability to activate the concept of the picture plane.
Produce cohesive composition.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ART 130 or GRA 133.
3 Credits
5 Weekly Lab Hours

ART 144 Figure Painting
This course will emphasize painting from the nude and draped model. The figure will be studied as a singular form and studied within the environment. Painting in the acrylic medium utilizing "engrisaille" techniques as well as utilizing the full color palette will be stressed in the course. Demonstration, discussion, and formal critiques will augment studio work. NOTE: Pre-Req may be waived by Department.
Upon successful completion of this course, students should be able to:
Demonstrate the ability to paint the human figure utilizing perceptual means incorporating bold, gestural and quick mark-making skills.
Demonstrate the ability to paint the human figure utilizing perceptual means within a sustained pose incorporating the interplay of hue, value and chroma.
Demonstrate the ability to paint the human figure incorporating basic knowledge of human anatomy and art historical connections.
Demonstrate the ability to activate the concept of the picture plane.
Produce cohesive composition.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ART 140.
3 Credits
5 Weekly Lab 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, graduated wash, wet into wet, lifting, scraping, resist, drops and splatter, and dry brush techniques within a watercolor painting.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits
5 Weekly Lab Hours

ART 190 ART Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. NOTE: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
1 Credit

ART 194 ART Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. NOTE: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

ART 199 ART Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. NOTE: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
3 Credits 3 Weekly Lecture 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.
Prerequisites: ART 111 and ENG 100.
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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 122 or GRA 122) and (ART 130 or GRA 133).
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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 multimedia 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.
Use online search tools for college-level research using appropriate hardware and software.
Print raster-based graphics on black and white and color printers.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: (ART 122 or GRA 122) and (ART 130 or GRA 133).
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 208 or GRA 208) and (ART 211 or GRA 211).
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 123 or GRA 123) and (ART 208 or GRA 208).
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 208 or GRA 208) and (ART 211 or GRA 211).
Corequisites: ART 213 or GRA 213.
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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 editors, the current versions of HTML and CSS 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, students should be able to:
Employ the theory and principles of effective user interface design.
Apply the basic design principles to the structure of HTML formatted web documents with emphasis on the visual aesthetic.
Organize effective navigation between various interface designs.
Apply basic HTML code to web documents using visual editing software.
Apply basic CSS code to enhance the visual appeal of the web page.
Use image-editing software to produce optimized web graphics.
Use a professional quality visual editor to develop and maintain web sites.
Solve projects in a unique and creative manner.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 123 or GRA 123) and (ART 208 or GRA 208) and (ART 211 or GRA 211).
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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 an 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 123 or GRA 123) and (ART 208 or GRA 208) and (ART 211 or GRA 211).
Corequisites: ART 215 or GRA 215.
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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 of this course, students should be able to:
Combine type and image in a layout to communicate an idea or message.
Interpret and represent an idea by means of a mark or symbol.
Interpret advertising copy and incorporate it in a design.
Demonstrate visual gestalt principles in solving a design problem.
Use traditional graphic design tools and techniques to develop a design concept from sketch to tight comprehensive layout.
Evaluate visual solutions to design problems verbally and in writing.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 123 or GRA 123) and (ART 208 or GRA 208) and (ART 211 or GRA 211).
Corequisites: ART 215 or GRA 215.
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 213 or GRA 213) and (ART 230 or GRA 230).
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 131 or GRA 134) and (ART 215 or GRA 215) and (ART 230 or GRA 230).
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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. Course work will include, individual and group studio work and critiques.
Upon successful completion of this course, students should be able to:
Produce, select, critique and refine a body of work that represents a breadth of media, subject matter, design approaches and concept.
Demonstrate the ability to activate the concept of the picture plane.
Demonstrate the ability to work from direct observation incorporating the basic properties of line, value, figure-ground relationship, textures and color.
Produce original works of art displaying cohesive composition.
Create a logical and coherent body of work incorporating a high level of craftsmanship and professionalism indicative to the discipline.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 122 or GRA 122) and (ART 123 or GRA 123) and (ART 124 or GRA 121) and (ART 130 or GRA 133) and (ART 131 or GRA 134) and ART 140 and ART 141 and ART 142.
3 Credits
5 Weekly Lab 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.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
3 Credits
5 Weekly Lab Hours

ART 237 Alternative Processes
In this course students will explore a wide variety of alternative photographic processes that include formula's for light sensitive materials to create hand-applied emulsions. Students will learn how to make images with and without cameras or negatives and how to print them on non-traditional materials. 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 photographic image in terms of light, shape, form and organization of the two-dimensional plane.
Demonstrate technical control over darkroom and non-darkroom procedures, processing, and printing with alternative photographic materials.
Demonstrate skills that display a personal aesthetic approach to alternative process materials.
Make informed choices about composition when photographing and editing images.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 123 or GRA 123) and (ART 133 or ART 160).
3 Credits
5 Weekly Lab 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.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of art
Prerequisites: ART 236.
3 Credits
5 Weekly Lab Hours

ART 240 Medium and Large Format Photography
This course introduces the student to Medium and Large Format Photography including camera movements, the Scheimpflug principle and other techniques unique to medium and large format cameras as well studio lighting. The formal and aesthetic concerns of creating images in medium and large 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 medium and large format cameras and components.
Demonstrate technical control over darkroom procedures for medium and 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.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: (ART 123 or GRA 123) and ART 134.
3 Credits
5 Weekly Lab 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. NOTE: Pre-req 27 credits of ART toward Photography track AFA includes ART 237, Art faculty approval.
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.
Produce content as an effective form of visual communication.
Practice critical thinking skills through the production and evaluation of artwork.
Prerequisites: ART 237.
Corequisites: ART 239 and ART 240.
3 Credits
5 Weekly Lab 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 Lab 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.
Prerequisites: AUT 100.
4 Credits 2 Weekly Lecture Hours
4 Weekly Lab 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.
Prerequisites: AUT 100.
4 Credits 2 Weekly Lecture Hours
4 Weekly Lab 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.
Prerequisites: AUT 100.
4 Credits 2 Weekly Lecture Hours
4 Weekly Lab 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.
Prerequisites: AUT 100.
4 Credits 2 Weekly Lecture Hours
4 Weekly Lab 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.
Prerequisites: AUT 100.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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.
Prerequisites: AUT 101 and AUT 102 and AUT 123 and AUT 151 and AUT 152.
3 Credits 1 Weekly Lecture Hour
4 Weekly Lab 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.
Prerequisites: AUT 100.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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.
Prerequisites: AUT 100.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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.
Prerequisites: AUT 100 and AUT 101.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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 as well as 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.
Prerequisites: AUT 100.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: AUT 100 and AUT 101.
3 Credits 1 Weekly Lecture Hour
4 Weekly Lab Hours

AUT 190 Automotive Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

AUT 194 Automotive Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

AUT 199 Automotive Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

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.
Prerequisites: AUT 100.
4 Credits 2 Weekly Lecture Hours
4 Weekly Lab 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.
Prerequisites: AUT 100 and AUT 151.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

BIO - Biology

BIO 100 Biological Sciences
Students in this course will explore 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 degrees. BIO 100 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.
Relate the life characteristics to the simplest level of existence: the single cell.
Explain various patterns of reproduction among plants and animals.
Evaluate various techniques of population control.
Explore 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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

BIO 102 Humans and the Environment
This course provides an introduction to the study of the design of the natural world and interactions between humans and their environment. It includes an investigation of the impact of human activities on biodiversity, natural resources, availability of energy and contamination of the environment. The scientific, economic and social issues that contribute to environmental problems are also examined. Sustainability principles, policies, and programs are explored on the local, national and global level. This course is an elective designed for non-science majors.
Upon successful completion of this course, students should be able to:
Describe the components of the natural world and analyze their relationships with each other.
Describe the population dynamics of different species, excluding humans in the biosphere.
Explain the effects that human activities have on Earth's capacity to sustain biodiversity and natural resources.
Describe the relationship between human population dynamics and environmental change.
Analyze the energy alternatives available to meet the demands of the human population on the world's natural resources.
Identify local, national, global policies that impact the sustainability of natural resources and biodiversity.
Identify sustainable practices that can help mitigate global environmental problems.
Describe the effect of economic development and conflict on environmental impact.
Demonstrate the necessary laboratory skills to measure and analyze environmental parameters.
Demonstrate an understanding of laboratory experiments as they relate to ecological concepts.
College Academic Learning Goal Designation: Global Understanding (GU), Scientific Reasoning (SI)
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

BIO 110 General Biology I
General 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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: (REA 050 or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

BIO 111 General Biology II
General 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.
Prerequisites: BIO 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 setting.
Prerequisites: (REA 050 or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: 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 function.
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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
Corequisites: ENG 100.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 or allied health fields. NOTE: Pre-req requires grade of 'C' or better.
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 understanding of conception, pregnancy, embryonic and fetal development, including an introduction to human inheritance.
Demonstrate an ability to perform modern laboratory skills, including dissection and microscopy.
Collect and analyze experimental data, formulate appropriate conclusions, and compile lab reports.
Prerequisites: BIO 150.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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. NOTE Pre-Req BIO 111 is recommended but not required.
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.
Prerequisites: BIO 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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. NOTE Pre-Req BIO 111 is recommended but not required.
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.
Prerequisites: BIO 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

BIO 220 Nutrition and Well Being
This is a one semester course covering the basic principles of human nutrition and their application to the maintenance of lifelong health and well-being. It is designed to fulfill the requirements of certain allied health and nursing programs, and so is taught by a dietitian/nutritionist licensed by the Commonwealth of Pennsylvania. Essential dietary requirements are introduced along with digestive anatomy and physiology. Food sources, chemistry, and digestion of proteins, carbohydrates and fats are discussed. Recommended vitamin and mineral intakes are covered, including the detrimental effects of deficient or toxics intakes. Energy balance issues and clinical problems associated with poor nutrition are considered. Students are required to complete an online nutritional assessment of their daily nutrient intake.
Upon successful completion of this course, students should be able to:
Analyze the nutrient requirements for a healthy, balanced nutrition style.
Perform and interpret an electronic nutritional analysis.
Relate basic nutrients to various established dietary guidelines.
Interpret the effects of nutrient deficiencies and megadoses.
Demonstrate understanding of energy balance and problems associated with energy balance.
Recognize conditions and diseases which can place patients/clients at nutrition risks.
Prerequisites: BIO 111 or BIO 151.
3 Credits 3 Weekly Lecture Hours

BIO 230 Introduction to Microbiology
Introduction to 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 roles of microorganisms in disease, genetic engineering, and the environment will also be covered. The course is designed for students in the Science for the Health Professions curriculum.
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 the 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.
Prerequisites: (BIO 110 and CHE 110) or (BIO 150 and BIO 151).
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

BIO 240 General Microbiology
General Microbiology is intended for Mathematics, Natural Science majors. This course will provide an introduction to the basic concept of microbial evolution, physiology, ecology, genetics and pathogenesis. This course meets the competencies outlined in the Pennsylvania state-wide articulation agreement for preparation in Microbiology.
Upon successful completion of this course, students should be able to:
Describe the characteristics and classifications of various groups of rnicrobes, including bacteria, archaea, protists, fungi, helminthes, prions, viruses and vitoids.
Describe the structure and function of the cellular structure of prokarotes and eukaryotes.
Describe the metabolic pathways utilized by prokaryotes including glycolytic pathways, fermentation, respiration, and photosynthesis.
Describe methods of prokaryotic reproduction and interpret a bacterial growth curve.
Describe gene expression, regulation and transfer in prokaryotes.
Explain strategies of viral infection and replication.
Explain the major steps in the evolution of life on Earth.
Describe the symbiotic relationships the microbes have with other organisms, including mutualism, parasitism and commensalism.
Explain the role of microbes in biogeochemical cycles and the production of commercially and medically important materials.
Examine the role of microorganisms in disease.
Access, interpret and evaluate peer-reviewed primary scientific literature.
Demonstrate safe laboratory practices and competency in the use of aseptic procedures for the safe handling of live microbes.
Use laboratory techniques to identify an "unknown" organism.
Apply standard techniques used for the study of microorganisms in the laboratory.
Prerequisites: BIO 110 and CHE 110.
4 Credits 3 Weekly Lecture Hours
3 Weekly Lab Hours

BIO 250 Genetics
Genetics examines how molecular information relates to the appearance and behavior of living things and how this information is transferred from one organism to another. Course topics include Mendelian genetics, DNA replication, gene expression, chromosomal structure, population genetics, evolution, and current laboratory techniques used to study genetic material and heredity in living organisms. This course meets the competencies outlined in the Pennsylvania Statewide Program-to Program Articulation Agreement in Biology for preparation in Genetics and is designed for Mathematics-Natural Sciences (MNS) students.
Upon successful completion of this course, students should be able to:
Relate the principles of Mendelian genetics to the underlying molecular mechanisms of inheritance.
Apply the principles of Mendelian genetics to genetic crosses.
Describe how the nucleic acid sequences (genotype) relates to the physical characteristics and abilities of an organism (phenotype).
Examine the processes of DNA replication, mitosis, and meiosis and how these processes result in genetic variation between organisms.
Describe the structure of chromosomes and how genetic information of organisms is packaged.
Relate genetic principles to the process of evolution.
Describe and apply current genetic models of inheritance in populations.
Examine modern genetic and genomic techniques, analysis, and manipulation.
Apply standard laboratory techniques used in genetics, including production and analysis of genetic crosses, microscopic study of chromosomes, DNA isolation, electrophoresis, handing and genetic analysis of microbes, restriction digests, and bacterial transformation.
Design, conduct, and evaluate a genetic cross.
Prerequisites: BIO 110 and CHE 110 and (MAT 151 or MAT 152 or MAT 160 or MAT 161 or MAT 200 or MAT 210 or MAT 230 or MAT 260 or MAT 261).
4 Credits 3 Weekly Lecture Hours
3 Weekly Lab 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, students 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

BUS 101 Introduction to International Business
This course will detail 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 this 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

BUS 104 Mathematics for Business
This course utilizes mathematical operations to solve practical business application problems which will develop a strong business mathematics and personal finance foundation. Students use arithmetic skills and equation solving techniques, exponential functions, arithmetic and geometric progressions, summation notation, and basic statistics. Students apply these to a variety of business-related tasks: banking services, payroll calculations, taxes, risk management, mathematics of retailing, time value of money, stocks, bonds, insurance, financial statements, depreciation, inventory costs, stocks, bonds, metric system and business statistics. The fundamentals of spreadsheet software will also be introduced.
Upon successful completion of this course, students should be able to:
Use arithmetic operations 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, calculate markup and markdowns based on cost and selling price, calculate gross and net payroll figures, create four types of depreciation schedules including double-declining balance, calculate methods for valuing inventory including LIFO, FIFO and Weighted Average, define a mutualfund and calculate net asset value.
Use equation solving skills to solve business problems.
Use arithmetic and geometric progressions to apply Time Value of Money (TVM) concepts to financial plans and decision making, compute finance charges in installment buying and revolving charge accounts, calculate simple interest, utilize the United States Banker Rule "US Rule" to calculate interest credits, read and interpret a simplified Balance Sheet, Income Statement and Ratio analysis, differentiate between interest-bearing and imputed-interest on non-interestbearing notes, compare and contrast the comprehensive costs of home ownership vs renting, and calculate the current yield and the yield to maturity on securities.
Use exponential functions to calculate compound interest in banking decisions.
Use summation notation to explain the "rule of 78" and utilize to compute rebates and payoffs and determine three types of "averages" (mean, median and mode).
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

BUS 130 Business Communication
This course focuses on developing oral and written communication skills in the context of the contemporary business environment. Students apply skills in planning, composing, and revising a variety of messages delivered orally and through writing. In addition, students develop the competencies necessary to communicate effectively in a variety of professional situations that involve speaking, listening, and writing.
Upon successful completion of this course, students should be able to:
Apply the transactional model to make decisions related to communicating effectively in the business environment.
Construct and deliver effective oral presentations using appropriately designed visual aids.
Demonstrate the ability to adapt business messages to diverse audiences.
Use the writing process to create business messages that are organized, logical, clear, and concise.
Identify, evaluate, and incorporate information that supports proposals presented orally and through writing.
Demonstrate the ability to listen empathically, critically and actively.
College Academic Learning Goal Designation: Oral Communication (OC)
Prerequisites: ENG 100 and DPR 100.
3 Credits 3 Weekly Lecture Hours

BUS 190 Business Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
1 Credit

BUS 194 Business Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
2 Credits

BUS 199 Business Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
3 Credits 3 Weekly Lecture Hours

BUS 210 Principles of Management
This course presents students with an application of management theory to management practice. The course examines the characteristics and interconnectedness of effective planning, organizing, leading, and controlling across an organization. Students explore the skills, traits, behaviors, and practices of effective managers and leaders in the context of a business environment that is uncertain and constantly changing.
Upon successful completion of this course, students should be able to:
Discuss the influence of management theory on current management practice.
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 skills, traits, and behaviors of effective leaders and managers.
Describe the major functions of human resource management and the role they play in strategic management.
Discuss the tools and techniques used in the control process.
Discuss the decision-making and problem-solving methods that managers use.
Analyze the economic, technological, sociocultural, political-legal, and international environments and determine how they affect management.
Describe the ethical and social responsibilities that managers have to internal and external stakeholders.
Prerequisites: 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.
Prerequisites: (ENG 050 and REA 075) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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, students 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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, students 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.
Explain 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 organizational 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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. This 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.
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 human resource 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 the corporate culture and describe the factors that interact to affect corporate culture.
Explain the various types of corporate culture.
Explain the collective bargaining process.
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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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 will focus 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 systems 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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 will provide 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 employment 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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 parametric estimation and testing. The basic concepts of frequency and probability distributions, measures of central tendency and variance as well as hypothesis testing of means, variances and goodness of fit are presented. There is also brief discussion on non-parametric methods, regression analysis, correlation and price indices.
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.
Develop and interpret simple and multiple regression equations and their correlation 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.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 100 or MAT 121 or MAT 128 or MAT 135 or MAT 136 or MAT 140 or MAT 141 or MAT 150 or MAT 151 or MAT 152 or MAT 160 or MAT 161 or MAT 200 or MAT 210 or MAT 230 or MAT 260 or MAT 261.
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). NOTE: Prerequisite or corequisite: BUS 220.
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.
Corequisites: BUS 220.
1 Credit 1 Weekly Lecture Hour

BUS 230 Principles of Marketing
This course introduces students to the total marketing process. Students explore key marketing concepts and activities related to the development of strategies related to product, price, place, and promotion. Topics include marketing strategy, the marketing environment, segmentation, targeting and positioning, marketing research, consumer behavior, branding, ethics, and social responsibility.
Prerequisites: 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 successful completion of this course, students should 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.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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 antitrust, 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.
Prerequisites: BUS 100 and 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 on 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

CHE - Chemistry

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 stoichiometry.
Perform calculations including concentrations, dilution and simple acid base chemistry.
Use nuclear chemistry to describe radioactive decay.
Collect, analyze and interpret experimental data from the performance of inorganic laboratory experiments.
Apply safe laboratory skills to solve problems in a cooperative environment.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
3 Weekly Lab 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.
Prerequisites: CHE 101.
4 Credits 3 Weekly Lecture Hours
3 Weekly Lab 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, the mole and stoichiometry, gas laws, solution chemistry, thermochemistry, chemical periodicity and atomic structure 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 stoichiometry.
Apply the kinetic molecular theory to account for the properties of gases and use the gas laws in 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.
Collect experimental data utilizing modern chemistry laboratory techniques, problem solve and analyze the data to formulate appropriate conclusions and compile lab reports.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 100 or MAT 110 or MAT 128 or MAT 135 or MAT 136 or MAT 140 or MAT 141 or MAT 150 or MAT 151 or MAT 152 or MAT 160 or MAT 161 or MAT 200 or MAT 210 or MAT 230 or MAT 260 or MAT 261). Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
3 Weekly Lab 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. NOTE: Pre-requisites CHE 110 with a grade of C or better; alternate pre-req to MAT 151 - Placement into MAT 152 or higher
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.
Prerequisites: CHE 110 and (MAT 151 or MAT 140 or MAT 150). Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
3 Weekly Lab 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.
Prerequisites: CHE 111.
5 Credits 4 Weekly Lecture Hours
3 Weekly Lab 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.
Prerequisites: CHE 200.
5 Credits 4 Weekly Lecture Hours
3 Weekly Lab Hours

COMM - Communication Studies

COMM 100 Interpersonal Communication
This course focuses on the theory and the practice of human communication with an emphasis on one-on-one (dyadic) communication in diverse relationships and various contexts.
Upon successful completion of this course, students should be able to:
Distinguish between interpersonal communication and other types of human communication.
Describe the individual, cultural, and social factors that affect interpersonal communication.
Explain the interconnectedness of communication and culture within interpersonal relationships.
Explain the role of verbal and nonverbal expression in interpersonal relationships.
Explain the role of technology in interpersonal communication.
Describe the role of interpersonal communication in developing, negotiating, maintaining, and terminating relationships.
Identify listening styles and barriers to active listening.
Identify the consequences of different conflict management behaviors.
Describe the ethical responsibilities of a communicator.
College Academic Learning Goal Designation: Oral Communication (OC)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 (eg, political, intellectual, social, family, national, and cultural-group) informs an intercultural communication encounter.
Describe cultural shock and the various academic approaches to understanding it.
Prerequisites: COMM 100.
3 Credits 3 Weekly Lecture Hours

COMM 104 Introduction to Mass Communication
This course introduces students to the industrialized production, distribution, regulation, consumption and analysis of print, electronic and new media industries. Students will review the history of mass communication in the media industries and explore career options in this field. They will also study the interrelated nature of media and society.
Upon successful completion of this course, students should be able to:
Explain the origins of the media industries.
Analyze the impact of print, electronic and new media upon society.
Explain the changing nature of the media industries in the late 20th and early 21st centuries.
Explain the convergence of media forms.
Assess the various mass communication career opportunities in the media industries.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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, students 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.
Prerequisites: COMM 100.
3 Credits 3 Weekly Lecture Hours

COMM 106 New Media and Culture
This course introduces students to theories, industrial trends and consumer practices related to digital media. Topics will include media convergence, media literacy, and cultural criticism in the digital age as well as audience/fan studies. Upon completion of this course, students will gain a foundational knowledge of recent scholarly work related to the field of media studies.
Upon successful completion of this course, students should be able to:
Explain contemporary digital media industries.
Describe mediated consumer practices.
Apply media theories to the study of digital and new media technologiesExplain the role media literacy and critical consumption plays in a democratic society.
Explain the influence digital media platforms and computer-mediated communication has on culture.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
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.
Adapt presentation message to audience and occasion
College Academic Learning Goal Designation: Oral Communication (OC)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

COMM 190 Communications Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. NOTE: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
1 Credit

COMM 194 Communications Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. NOTE: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
2 Credits

COMM 199 Communications Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
3 Credits

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/they 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.
Prerequisites: COMM 111.
3 Credits 3 Weekly Lecture Hours

COMM 201 Communication Theory
This course examines the major paradigms within the study of human communication by introducing students to both historical and contemporary communication theories from various branches of the discipline. Students will evaluate and apply the theories in and across a variety of contexts.
Upon successful completion of this course, students should be able to:
Define theory.
Demonstrate an understanding of theory/model development.
Distinguish between the major paradigms within the communication discipline.
Identify key branches of study within the communication discipline.
Apply major communication theories.
Critique communication theories by identifying constructs and limitations.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

CPT - Carpentry

CPT 102 Carpentry Fundamentals
This course is designed for students preparing for a career in carpentry. Students are introduced to foundational concepts and principles of the carpentry trade. Students receive instruction in the use and care of hand and power carpentry tools; layout, measuring and cutting procedures; as well as selection and application of building materials.
Upon successful completion of this course, students should be able to:
Demonstrate knowledge of hand and power tools and their practical applications.
Demonstrate understanding of workplace safety requirements.
Utilize measurement tools correctly and accurately.
Demonstrate basic layout and cutting procedures.
Read and apply basic blueprints for carpentry jobs.
Identify the structural components in construction.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

CPT 105 Framing and Roofing
This course provides students with the basic principles of framing and roofing. It includes terminology, print information, design, codes and systems. Students also receive hands on training in rough framing skills as well as the construction of common types of roofs.
Upon successful completion of this course, students should be able to:
Demonstrate knowledge of the components of framing and roof structures.
Estimate materials for framing and roofing.
Frame structures using blueprint information.
Install insulation.
Demonstrate knowledge of the different types of roofing and materials.
Construct simple roof rafters.
Complete different types of roofing jobs.
Prerequisites: CPT 102.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

CPT 110 Exterior Finishing
This course is designed to teach students the necessary skills needed to complete exterior finishing in residential construction. Instruction includes insulation, siding, window and door installations.
Upon successful completion of this course, students should be able to:
Estimate materials for exterior finishing.
Demonstrate knowledge of different types of sidings and exterior finishing.
Apply different types of sidings.
Select and install appropriate windows and doors based on rough openings and manufacturers specifications.
Select and install various types of window casings and window glazing.
Construct and set door frames.
Identify and install door and window hardware.
Prerequisites: CPT 102.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

CPT 115 Interior Finishing
This course is designed to teach students the necessary skills needed to complete interior finishing in residential construction. Topics covered include dry wall, doors, trim and paneling, as well as the layout, fabrication and installation of staircases.
Upon successful completion of this course, students should be able to:
Safe and proper use of power and hand tools.
Demonstrate knowledge of wall and ceiling covering materials.
Demonstrate proper applications of different types of moldings.
Prepare and install various interior door frames and doors.
Install various types of floors.
Identify the various types of stairs.
Construct basic stairways.
Prerequisites: CPT 102.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

CPT 120 Energy Efficiency
This course introduces students to the techniques and materials used in remodeling and new construction of homes. Topics covered in the class include green building and green building standard; energy conservation; weatherization and efficiency techniques.
Upon successful completion of this course, students should be able to:
Demonstrate understanding of industry standards related to green building and energy efficiences.
Demonstrate knowledge of areas of inefficiency in homes.
Demonstrate understanding of different types of insulation and their uses.
Identify more efficient construction and landscaping designs.
Conduct a general home energy audit.
Prerequisites: CPT 102.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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. NOTE: Must have department head approval
Upon successful completion of this course, students should be able to:
Describe cabinet design considerations.
Make basic sketches and layouts.
Generate a Bill of Material for a project.
Identify woods by sight.
Discuss applications for woods.
List applications for each wood species.
Apply veneers.
Affix plastic laminates.
Select and apply different fasteners.
Use hand and power tools safely.
Make up various wood joints.
Fabricate fixtures.
Prepare a project for finishing.
Apply finishes to wood.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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. NOTE: Must have department head approval
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.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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 Lab 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
Prerequisites: CPT 151.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

CPT 190 Carpentry Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

CPT 194 Carpentry Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
Prerequisites: CPT 102 and CPT 105 and CPT 110 and CPT 115 and CPT 120.
2 Credits

CPT 199 Carpentry Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

CS - Computer Science

CS 102 Introduction to Python
Students learn the fundamentals of designing, developing, and testing computer programs using the Python programming language. Problem-solving, logic and critical reasoning skills are emphasized as you learn to create programs with Python. Covers the fundamentals of computer science as well as planning, coding and debugging computer programs. This is an introductory level course and previous programming experience is not necessary. NOTE: Computer Science and IT majors may substitute this course for DPR 101 - Introduction to Computer Science.
Upon successful completion of this course, students should be able to:
Define basic computing and programming terms.
Navigate through the Python development environment.
Explain and use data, operations, functions and data types in a Python program.
Apply the correct control and iterative structures to a Python program.
Use mathematical equations in the creation of a Python program.
Design, write, test and debug a Python program to implement a working solution to a given problem specification.
Use Python documentation or a knowledge base to resolve technical issues.
Appropriately implement the major steps in the analysis, design and development of a Python computer program.
Explain how binary sequences are used to represent digital data.
Explore career opportunities in computer-science, personal computing and business applications programming.
College Academic Learning Goal Designation: Critical Reasoning (CR), Information Technology (TC)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

CS 117 Fundamentals of Game Design Theory and Practice
This course introduces students to the theory and practical aspects of the computer game development process. Students brainstorm a game idea, establish focus, determine the storytelling mode, and document the design.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of the vocabulary of game design theory and practice.
Identify the techniques of top game designers.
Analyze and identify the elements that make successful games.
Apply the computer game development process to create a design document.
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

CS 118 Game Creation Development
This course focuses on designing, developing and testing computer games using game creation development tools. Students use an icon-based system of events and actions to program computer games. Principles of successful game design and techniques of top game designers are also explored.
Upon successful completion of this course, students should be able to:
List requirements for a game development studio.
Describe the basic elements of an image and how to manipulate it.
Identify and describe game genres.
Identify the elements of good game design.
Utilize the computer game development process to create games using a game engine and design tool.
Demonstrate the ability to use game creation development tools to develop games for inclusion in a portfolio.
Prerequisites: DPR 100 and (DPR 117 or CS 117 or DPR 238).
3 Credits 3 Weekly Lecture Hours

CS 119 Introduction to Computer Game Programming
This course introduces students to the concepts of programming using an object-orient programming language and game development tools. Students will create 2D and 3D games using game development tools as well as program a full-featured role-playing game (RPG) using an object-oriented programming language.
Upon successful completion of this course, students should be able to:
Describe the elements of game programming.
Create a 2D game using game development tools.
Create a 3D game using game development tools.
Use the basic programming constructs of an object-oriented programming language.
Create animations for a game.
Add sounds to a game.
Create a game using a HTML5 game-based creation engine.
Create an RPG using an object-oriented programming language
Prerequisites: DPR 101.
Corequisites: DPR 117 or CS 117 or DPR 238 or DPR 118 or CS 118 or DPR 232.
3 Credits 3 Weekly Lecture Hours

CS 121 Game Art and Animation
The focus of this course is to create 2D artwork, arrange U-V's, generate textures, and create a 3D model. Students create 3D models and animations using industry standard computer graphics software.
Upon successful completion of this course, students should be able to:
Identify the requirements of 2D artwork.
Demonstrate the ability to design and develop 2D artwork.
Identify the requirements of a 3D model.
Use a 3D modeling software product to create models and animations.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

CS 130 Introduction to Unity 3D
This course introduces students to the world's most popular game engine, Unity 3D. Students will learn how to create interactive content for gaming, simulations and visualization.
Upon successful completion of this course, students should be able to:
Demonstrate proficiency using the basics of the software.
Import, create and manage 2D, 3D and audio assets.
Apply materials and textures.
Animate objects and parameters.
Create interactive user interfaces and navigation.
Design, develop and export content for testing, debugging and presentation.
Research and explore careers and education in interactive design and development.
Prerequisites: DPR 100 and (ENG 050 or ENG 099 or REA 075). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

CS 131 Virtual Asset Production
This course introduces students to the fundamentals of creating 2D and 3D assets for use in real-time, virtual environments and games using industry-standard software and hardware.
Upon successful completion of this course, students should be able to:
Identify the requirements of 2D asset development.
Design and develop 2D assets.
Identify the requirements of 3D asset development.
Create and animate 3D assets.
Import and manage assets in Unity 3D game engine.
Apply the production pipeline to deploy assets for previsualization and presentation.
Prerequisites: CS 130.
3 Credits 3 Weekly Lecture Hours

CS 132 C# Programing for Interactivity
This course introduces students to the concepts of programming using the C# programming language. Students will learn how to write C# code for interactivity using Microsoft Visual Studio and Unity 3D.
Upon successful completion of this course, students should be able to:
Write clean and reusable C# code for scripting interactivity.
Identify similarities and differences between relating coding languages.
Create interactive HUD (Heads-Up Displays).
Create interactive 3D experiences.
Design, develop, and deploy content on XR devices for testing, debugging, and presentation.
Prerequisites: (DPR 101 or CS 101) and CS 130.
3 Credits 3 Weekly Lecture Hours

CS 133 Augmented, Mixed and Virtual Reality: XR Fundamentals
This course introduces students to augmented, mixed and virtual reality technologies. Using the Unity 3D game engine, students will learn how to create interactive and immersive experiences using industry-standard XR hardware.
Upon successful completion of this course, students should be able to:
Understand the production pipeline for successful XR output and delivery.
Create AR experiences for mobile devices.
Create MR experiences.
Create VR experiences.
Determine the appropriate hardware, software, and network environment that support XR design and development.
Research and explore innovative, emerging media technologies, skills, and careers as it pertains to the field of interactive computing.
Understand how to deploy XR content for testing, debugging, and distribution.
Prerequisites: (DPR 101 or CS 101) and CS 130.
3 Credits 3 Weekly Lecture Hours

CS 190 Computer Programming Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

CS 194 Computer Programming Internship (2 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

CS 199 Computer Programming Internship (3 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits 3 Weekly Lecture Hours

CS 200 UX Design
User experience (UX) design is a discipline concerned with all the elements that together make up the user interface, including layout, visual design, text, brand, sound and interaction. (Source: User Experience Professionals Association). This course introduces multi-device design strategies for navigation, screen layout, and interactive content. Learn how to apply interaction design principles to your apps and web sites to create experiences that are engaging, accessible and usable. Follow a user-centered design process for analyzing, planning, and designing user experiences. Map user needs to your proposed UX design solution with scenarios, storyboards and prototypes. Gain insight on how to incorporate accessibility into your design process to increase accessibility to all people, including those with disabilities.
Upon successful completion of this course, students should be able to:
Identify and apply an interactive design process model.
Design applications employing user-centered design techniques.
Analyze techniques for assuring compliance with accessibility guidelines.
Use rapid-prototyping tools to develop user interfaces that utilize interface design standards.
Apply visual principles such as layout, color, iconography, imagery and typography to maximize the UX experience.
Identify career paths, academic programs and training opportunities in the field of User Experience Design.
Prerequisites: IMM 110 and IMM 120.
3 Credits 3 Weekly Lecture Hours

CS 202 Intermediate Python
This course teaches students the fundamentals of Object Oriented Programming (OOP) by designing, coding and testing simple applications using Python. The course is designed for students who have an understanding of programming design and logic but who need to understand object-oriented programming methods and techniques. NOTE: Prerequisite requires a grade of 'C' or higher.
Upon successful completion of this course, students should be able to:
Use a Python IDE.
Use Python classes.
Create and use functions in a Python program.
Create and initialize classes.
Explain and use inheritance.
Use function overloading in a Python object-oriented program.
Use Object –Oriented programming techniques.
Prerequisites: CS 102.
3 Credits 3 Weekly Lecture Hours

CS 206 PHP/MySQL
Students learn to develop fully functional dynamic websites using PHP and a MySQL database. Topics include: setting up a development environment, using PHP to validate and process form data, sending email, creating regular expressions, implementing user authentication and security. Students will apply these concepts in the design of a My SQL relational database system and use PHP to create, read, update, search and delete records.
Upon successful completion of this course, students should be able to:
Identify the differences between static and dynamic Web design.
Write scripts to validate and process form submission data.
Build a relational MySQL database and write SQL queries to create, read, update, delete and search records.
Identify security issues and implement best practices and solutions.
Upload files to a web server and update and maintain web sites.
Identify career paths, academic programs and training opportunities in the field of Web Design and Development
Prerequisites: (DPR 101 or DPR 108) and DPR 207 and IMM 120.
3 Credits 3 Weekly Lecture Hours

CS 250 Digital Portfolio Development
The focus of the Digital Portfolio Development course is to design a portfolio that makes evident a student's knowledge and skills of their field of study. 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 portfolio can include work samples, letters of recommendation, references, transcripts, GPA, accomplishments/awards, competency lists, certifications, curricular standards, instructor assessments/evaluation, reflections, and work experiences/employer evaluations. Thus, a student's portfolio provides the ability to show work on demand and evidence of their preparation for a career or further education in their field of study. The objective of this course is for students to demonstrate the theoretical as well as the technical skills they have acquired throughout their program. Students will assess personal strengths to establish a career goal and decide how to organize their design and production work in a graduation portfolio. NOTE: Prerequisites: Depending on CS specialization, all required program courses.
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.
Explain copyright laws as it applies to acquiring and protecting intellectual property.
Demonstrate the ability to design and develop work samples using industry standard tools and/or programming languages.
Demonstrate the use of design and development tools to develop a digital portfolio.
3 Credits 3 Weekly Lecture 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:
Demonstrate the safe and proper use and care of commercial foodservice equipment.
Demonstrate safe kitchen work habits and safe food handling.
Demonstrate a proficiency in basic knife skills.
Demonstrate a proficiency in accurate weighing and measuring of wet and dry food ingredients.
Demonstrate a proficiency in production of stocks and leading sauces.
Demonstrate an understanding of the theory and practice of basic cooking techniques.
Demonstrate a working knowledge of basic culinary terminology.
Demonstrate the ability to identify various food products.
Prerequisites: MAT 040 or MAT 050. Appropriate placement test scores may be accepted.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

CUL 150 Baking and 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:
Demonstrate an understanding of the theory and practice of basic baking techniques.
Demonstrate an understanding of the science of ingredient interaction in baking.
Demonstrate a proficiency in accurate weighing and measuring (scaling) of wet and dry ingredients.
Demonstrate a proficiency in proper mixing of ingredients.
Demonstrate a proficiency in basic baking skills.
Demonstrate a proficiency in production of various baked goods.
Demonstrate the ability to assemble and decorate a variety of baked goods and pastries.
Prerequisites: MAT 040 or MAT 050. Appropriate placement test scores may be accepted.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

CUL 151 Baking and Pastry Foundations II
This course introduces the student to the fundamentals of Pastry Design and Plated Desserts. Students lean 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:
Demonstrate an understanding and use of baking fundamentals to create dessert buffet items.
Design and execute a dessert buffet presentation.
Demonstrate an understanding of the use of chocolate in candy and garnish production.
Prepare restaurant desserts such as Creme Brulee, Ice Cream, Souffles and frozen desserts.
Design and execute components for plated dessert presentations.
Calculate costing and yield of plated desserts.
Demonstrate the proper use of commercial baking equipment.
Prepare classical desserts and sauces.
Prerequisites: CUL 150.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

CUL 199 Culinary Externship
Externship and/or Experiential Learning will provide an opportunity for Culinary Arts students, who have demonstrated a proficiency with basic skills to gain practical field experience. This field experience will allow the students to apply their acquired skills and develop greater proficiency in a real world situation. Students participating in this 180 hour experience will also earn 3 college credits for this experience.
Upon successful completion of this course, students should be able to:
Demonstrate the ability to apply kitchen safety and sanitation concepts learned in HRM.
Demonstrate the ability to perform in a professional setting in a professional manner with regard to attendance, punctuation, teamwork, attitude, production volume and quality, and ability to meet prescribed deadlines.
Demonstrate the ability to maintain a journal of their work experience including a log of duties performed, skills demonstrated, special project assignments, challenges encountered, supervisor reviews and self-reflections.
Demonstrate the ability to apply basic cooking skills learned in CUL 115 / CUL 230 or CUL 150 / CUL 151.
For Cooking Assignments (CUL 115 / CUL 230)- Proper use of commercial food service equipment, safe kitchen work habits, safe food handling, proficiency in knife skills and the use of kitchen tools, proficiency in weights, measures and recipe conversions.
For Baking Assignments (CUL 150 / CUL 151) Proper application of baking techniques, proficiency in proper mixing of ingredients, proficiency in production to various baked goods, proficiency in the use of kitchen tools, proficiency in weights, measures and recipe conversions.
Prerequisites: HRM 110 and ((CUL 115 and CUL 230) or (CUL 150 and CUL 151)).
3 Credits

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:
Demonstrate an understanding of the importance of effective purchasing.
Demonstrate knowledge of various purchasing options available in food service.
Exhibit the ability to develop product specifications.
Demonstrate the ability to determine appropriate purchase amounts.
Demonstrate an understanding of the financial responsibilities of a purchaser.
Identify the key strategies for directing the purchasing function.
Identify the elements representing value in purchasing.
Identify various selection factors when purchasing food and non-food items.
Prerequisites: MAT 040 or MAT 050. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

CUL 215 Menu Planning and 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:
Demonstrate an understanding of the history of foodservice and the development of various cuisines.
Demonstrate an understanding of modern foodservice and how it meets current market demands.
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 profitabilityIdentify the key aspects of menu design and the importance of the menu as a merchandising tool.
Demonstrate an understanding of various methods of menu analysis and exhibit the ability to use resulting data.
Prerequisites: MAT 040 or MAT 050. Appropriate placement test scores may be accepted.
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:
Demonstrate an understanding of basic nutrition and nourishment concepts.
Define vitamins, minerals, proteins, fats and carbohydrates.
Demonstrate an understanding of current public health dietary issues, including identification of the underlying causes and possible solutions.
Demonstrate the application of current FDA dietary guidelines when developing a menu.
Define and demonstrate an understanding of the concept of exchange lists.
Correctly identify the current trends and issues affecting food selection and menu planning for good nutrition practices.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 050. Appropriate placement test scores may be accepted.
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:
Demonstrate the production of compound sauces and soups.
Demonstrate meat, poultry and seafood fabrication and portioning.
Demonstrate a proficiency in food preparation skills and cooking techniques for commercial foodservice applications.
Demonstrate basic techniques in garde-manger.
Identify various spices, herbs and food stuff.
Demonstrate how to prepare classical entrees.
Demonstrate how to use culinary equipment and tools not normally found in American kitchens.
Demonstrate an understanding of the theory and practice of advanced cooking techniques.
Demonstrate a working knowledge of advanced culinary terminology.
Prerequisites: CUL 115.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: CUL 230.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: CUL 230.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

DPR - Computer Information Systems

DPR 100 Introduction to Information Technology
This course is designed to provide an introduction to Information Technology (IT) concepts and applications, and the impact of IT on individuals, organizations, and society. Core content includes computer hardware and software, digital communications, the Internet, databases, networking, programming, computer security, ethics in IT, and current and emerging digital technologies.
Upon successful completion of this course, students should be able to:
Identify the types of computers and describe their purposes.
Describe how the components of a computer system function.
Use system software and utility programs for maintenance, security, and organization purposes.
Use word processing software to create, edit, format and save various documents.
Use spreadsheet, software to construct formulas, use functions, chart and analyze data; and to create, edit, format, and a save spreadsheet.
Use database software to create a query, form, and report.
Use presentation software to create, edit, format and save a presentation.
Describe the importance of computer programming.
Describe the benefits of networks and computer security implications.
Describe the legal, ethical, and privacy issues concerning IT.
Use the internet for research, evaluate, and use information.
Use digital technologies to communicate and work collaboratively.
Research and evaluate career opportunities that utilize IT skills.
Develop an e-Portfolio comprised of academic artifacts.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

DPR 101 Introduction to Computer Science
An engaging and approachable course that explores many of the foundational concepts of computer science and programming. Develop problem-solving, logic and critical reasoning skills as you learn basic programming structures and concepts common to all programming languages. Covers the fundamentals computer science as well as planning, coding and debugging computer programs. Learn about using computers to process information, find patterns and test hypotheses about digitally processed information to gain insight and knowledge. This is an introductory level course and previous programming experience is not necessary.
Upon successful completion of this course, students should be able to:
Identify and select appropriate programming tools for application development.
Design and implement algorithms in a programming language that involve the use of iteration and boolean logic.
Develop programs that use variables, constants and arrays.
Create programs that can perform basic arithmetic operations.
Construct modular programs using functions.
Use appropriate tools and strategies for debugging and avoiding errors.
Summarize 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.
Apply the process of software development including design, implementation, documentation and testing.
Learn about using computers to process information, find patterns and test hypotheses about digitally processed information to gain insight and knowledge.
Explain how binary sequences are used to represent digital data.
College Academic Learning Goal Designation: Critical Reasoning (CR), Information Technology (TC)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

DPR 104 Introduction to Java Programming
This course teaches the fundamentals of analyzing problems and designing, developing and testing computer programs to solve them utilizing Java in an Integrated Development Environment (IDE). The course introduces the fundamental concepts and techniques for programming including simple data structures, algorithms, variables, control structures (decision and looping), text files, method writing, and arrays as well as simple shapes and Graphical user Interface (GUI) basics.
Upon successful completion of this course, students should be able to:
Define basic computing and programming terms.
Navigate a Java IDE to write and debug Java programs.
Identify and use the basic concepts and principles of structured programming.
Explain and use data, operations, functions, and data types.
Apply the correct control and iterative structures to a program.
Implement simple GUIs and write programs that display simple shapes.
Use mathematical equations in the creation of a computer program.
Design, write, test and debug a Java program to implement a working solution to a given problem specification.
Use documentation or a knowledge base to resolve technical issues.
Implement the major steps in the analysis, design and development of a computer program.
Explore career opportunities in computer science, personal computing and business applications programming.
Prerequisites: DPR 101 or DPR 108.
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 course, students should 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.
Prerequisites: DPR 100 or DPR 101 or DPR 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.
Prerequisites: DPR 100.
3 Credits 3 Weekly Lecture Hours

DPR 110 Introduction to C++
The purpose of the course is to teach students the fundamentals of analyzing problems and designing, developing and testing computer programs to solve them, utilizing C++ in an Integrated Development Environment (IDE). The course introduces the basic concepts of programming C++ programming language syntax, and progresses through the techniques of using logical structures such as decision making and loops, using data structures such as arrays, and using functions for logical code organization and re-use.
Upon successful completion of this course, students should be able to:
Define basic computing and programming terms.
Navigate through the C++ editor, compiler, and runtime environment.
Explain and use data, operations, functions and data types.
Apply the correct control and iterative structures to a program.
Use mathematical equations in the creation of a computer program.
Design, write, test and debug a program to implement a working solution to a given problem specification.
Use documentation or a knowledge base to resolve technical issues.
Implement the major steps in the analysis, design, and development of a computer program.
Explore career opportunities in computer science, personal computing, and business applications programming.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: DPR 101 or 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.
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: 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.
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Use Excel to develop professional-looking worksheets.
Develop charts and graphs.
Use Excel to manage financial data.
Use Excel to create static and dynamic Web pages.
Use Excel to work with multiple worksheets and workbooks.
Use Excel for data manipulation with database functions, lookup function, and templates.
Enhance Excel worksheets with Visual Basic and Macros for applications.
Use Excel worksheet for "What-If-Analysis".
Import data into Excel worksheets from other Microsoft applications.
Prerequisites: 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.
Corequisites: DPR 100.
3 Credits 3 Weekly Lecture Hours

DPR 117 Fundamentals of Game Design Theory and Practice
This course introduces students to the theory and practical aspects of the computer game development process. Students brainstorm a game idea, establish focus, determine the storytelling mode, and document the design.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of the vocabulary of game design theory and practice.
Identify the techniques of top game designers.
Analyze and identify the elements that make successful games.
Apply the computer game development process to create a design document.
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

DPR 118 Game Creation Development
This course focuses on designing, developing and testing computer games using game creation development tools. Students use an icon-based system of events and actions to program computer games. Principles of successful game design and techniques of top game designers are also explored.
Upon successful completion of this course, students should be able to:
List requirements for a game development studioDescribe the basic elements of an image and how to manipulate it Identify and describe game genresIdentify the elements of good game designUtilize the computer game development process to create games using a game engine and design toolDemonstrate the ability to use game creation development tools to develop games for inclusion in a portfolio
Prerequisites: DPR 100 and (DPR 117 or CS 117 or DPR 238).
3 Credits 3 Weekly Lecture Hours

DPR 119 Introduction to Computer Game Programming
This course introduces students to the concepts of programming using an object-orient programming language and game development tools. Students will create 2D and 3D games using game development tools as well as program a full-featured role-playing game (RPG) using an object-oriented programming language.
Upon successful completion of this course, students should be able to:
Describe the elements of game programming.
Create a 2D game using game development tools.
Create a 3D game using game development tools.
Use the basic programming constructs of an object-oriented programming language.
Create animations for a game.
Add sounds to a game.
Create a game using a HTML5 game-based creation engine.
Create a RPG using using an object-oriented programming language.
Prerequisites: DPR 101.
Corequisites: DPR 117 or CS 117 or DPR 238 or DPR 118 or CS 118 or DPR 232.
3 Credits 3 Weekly Lecture Hours

DPR 121 Game Art and Animation
The focus of this course is to create 2D artwork, arrange U-V's, generate textures, and create a 3D model. Students create 3D models and animations using industry standard computer graphics software.
Upon successful completion of this course, students should be able to:
Identify the requirements of 2D artwork.
Demonstrate the ability to design and develop 2D artwork.
Identify the requirements of a 3D model.
Use a 3D modeling software product to create models and animations.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
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 in the course 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.
3 Credits 3 Weekly Lecture Hours

DPR 190 Computer Programming Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: • Have completed a minimum of 18 or more credits within the last 5 years. • Have begun course work in their major (at least 9 credits). • Have an overall grade point average (GPA) of 2.5. • Obtain a written recommendation by a DCCC faculty within the discipline of the internship. • Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

DPR 194 Computer Programming Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

DPR 199 Computer Programming Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits 3 Weekly Lecture Hours

DPR 204 Intermediate Java Programming
This course teaches students how to create single-user applications using the Java programming language. Students learn the fundamentals of object-oriented programming (OOP) 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. It incorporates the design, coding and use of programmer developed classes and objects. Simple container classes are used to build collections of newly defined objects.
Upon successful completion of this course, students should be able to:
Define object-oriented programming terms.
Explain the fundamentals of object-oriented structures and principle of programming.
Design, implement and document Java classes to be used in a computer program.
Demonstrate use of Java class libraries.
Demonstrate use of methods and method overloading.
Explain inheritance and polymorphism and use them for derived classes.
Explain and use derived and abstract classes.
Demonstrate use of objected-oriented programming techniques to solve problems.
Build and use container classes such as vector and list.
Apply analytical skills to produce sample test cases, pseudocode or an incremental coding plan for a given problem specification.
Write, test and debug a Java program to implement a working solution to a given problem specification.
Prerequisites: DPR 104 or DPR 205.
3 Credits 3 Weekly Lecture Hours

DPR 206 PHP/MySQL
Students learn to develop fully functional dynamic websites using PHP and a MySQL database. Topics include: setting up a development environment, using PHP to validate and process form data, sending email, creating regular expressions, implementing user authentication and security. Students will apply these concepts in the design of a MySQL relational database system and use PHP to create, read, update, search and delete records.
Upon successful completion of this course, students should be able to:
Identify the differences between static and dynamic Web design.
Write scripts to validate and process form submission data.
Build a relational MySQL database and write SQL queries to create, read, update, delete and search records.
Identify security issues and implement best practices and solutions.
Upload files to a web server and update and maintain web sites.
Identify career paths, academic programs and training opportunities in the field of Web Design and Development
Prerequisites: IMM 120 and (DPR 101 or DPR 108) and DPR 207.
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, students 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.
Prerequisites: ((ENG 050 and REA 075) or ENG 099 or REA 050) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
4 Credits 4 Weekly Lecture Hours

DPR 210 Object Oriented C++
This course teaches students how to create single-user applications using the C++ programming language. Students learn the fundamentals of object-oriented programming (OOP) by designing, coding, and testing simple applications. The course is designed for students who have an understanding of programming using the C++ language. The student must be able to design and code functions and use logic structures to accomplish specific tasks. Using the aforementioned functions and structures, the student is guided to employ object-oriented programming methods and techniques in the development of a modern OOP application. This course does NOT cover graphical designs or graphic user interfaces (GUI)
Upon successful completion of this course, students should be able to:
Define object-oriented programming terms.
Explain the fundamentals of object-oriented structures and priniciples of programming.
Use a C++ compiler and Integrated Development Environment (IDE) to create, document and debug multi-file projects.
Design, code and implement C++ classes.
Design and use class methods.
Instantiate and use class objects.
Explain inheritance and polymorphism and use them for derived classes.
Generate and handle exception objects to support error processing.
Build and use function and class templates to provide generic processes for OOP applications.
Declare and use pointer variables to generate dynamic data structures.
Design, write, test and debug C++ program to implement a working solution to a given problem specification.
Prerequisites: DPR 110.
3 Credits 3 Weekly Lecture Hours
3 Weekly Lab Hours

DPR 212 Data Structures and Algorithms
This course focuses on problem analysis, algorithm design and refinement, and computer programming. Complex data structures such as stacks, heaps, and trees as well as sorting and searching techniques are examined. Software engineering methods and structured style as well as object-oriented programming are emphasized.
Upon successful completion of this course, students should be able to:
Develop programs using good programming style and object-oriented programming techniques to implement algorithms and data structures.
Use simple and advanced data types including linked lists, stacks, queues, trees, heaps and sets.
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.
Use documentation or a knowledge base to resolve technical issues.
Apply the software development process to design, write, test, and debug computer programs using an object-oriented language.
Prerequisites: (MAT 135 or MAT 152) and (DPR 204 or DPR 210).
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

DPR 214 jQuery/JavaScript
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. NOTE: Pre-reqs with grade of 'C' or better.
Upon successful completion of this course, students should be able to:
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.
Prerequisites: (DPR 101 or DPR 108) and IMM 120.
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.
Prerequisites: DPR 101 or DPR 108.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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, students 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.
Prerequisites: (REA 050 or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

DPR 228 PC Repair and 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, students 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.
Prerequisites: (REA 050 or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
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. NOTE: Pre-reqs with grade of 'C' or better.
Upon successful completion of this course, students should be able to:
Identify 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.
Prerequisites: IMM 120 and (DPR 101 or DPR 108).
3 Credits 3 Weekly Lecture Hours

DPR 250 Digital Portfolio Development
The focus of the Digital Portfolio Development course is to design a portfolio that makes evident a student's knowledge and skills of their field of study. 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 portfolio can include work samples, letters of recommendation, references, transcripts, GPA, accomplishments/awards, competency lists, certifications, curricular standards, instructor assessments/evaluation, reflections, and work experiences/employer evaluations. Thus, a student's portfolio provides the ability to show work on demand and evidence of their preparation for a career or further education in their field of study. The objective of this course is for students to demonstrate the theoretical as well as the technical skills they have acquired throughout their program. Students will assess personal strengths to establish a career goal and decide how to organize their design and production work in a graduation portfolio. NOTE: Prerequisites: Depending on CS specialization, all required program courses.
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.
Explain copyright laws as it applies to acquiring and protecting intellectual property.
Demonstrate the ability to design and develop work samples using industry standard tools and/or programming languages.
Demonstrate the use of design and development tools to develop a digital portfolio.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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. NOTE: Prerequisites: DRA 110 or comparable experience.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: DRA 110.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Write an educational philosophy that outlines current values and beliefs (key portfolio assessment).
Corequisites: (ENG 050 and REA 050) or ENG 099 or REA 075.
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.
Prerequisites: ECE 130.
3 Credits 3 Weekly Lecture Hours

ECE 111 Methods and Materials for Teaching
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 that support physical, cognitive, social and emotional development and inquiry based teaching strategies. Classroom design, play, and teacher/child interactions will be integral topics in this course. NOTE: College Academic Learning Goal Designation: Information Technology (TC) when taken with ECE 112, ECE 121, ECE 130, ECE 140 and ECE 201
Upon successful completion of this course, students should be able to:
Effectively apply the principles of developmentally appropriate practice, constructivism, socio-cultural theory, activity theory and play in developing active learning experiences.
Implement multiple approaches to learning and teaching.
Utilize supportive practices in teacher/child interactionsDesign 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.
Develop and implement effective classroom management strategies.
Utilize Pennsylvania's early childhood learning standards in developing learning experienceSelect, provide and evaluate materials and create new materials consistent with learning standards.
Explain the connection between materials, learning standards and instruction.
Differentiate teaching strategies to promote positive outcomes for each child, including the use of assistive technology for children with disabilities.
Evaluate and analyze developmentally appropriate use of technology with young children including electronic picturebooks, applications and software.
Integrate curriculum and assessment to create a learning project for preschool age children that applies developmentally appropriate teaching strategies including lesson planning, room design, differentiation and technology.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: ECE 140.
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 how to create and maintain their portfolio and how to use it in their careers. NOTE: College Academic Learning Goal Designation: Information Technology (TC) when taken with ECE 111, ECE 121, ECE 130, ECE 140 and ECE 201
Upon successful completion of this course, students should be able to:
Identify the purpose and use of a professional portfolio.
Identify the key components of a professional portfolio.
Evaluate key stakeholder requirements for demonstrating competence in the professional portfolio.
Create and format an electronic portfolio using free or low cost software.
Utilize digital technologies to store, retrieve, manipulate and transmit data.
Identify and compile online early childhood education resources for future use.
Self assess to identify prior learning and plan for future learning.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: ENG 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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. NOTE: Pre-reqs must be completed with grade of 'C' or better.
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.
Prerequisites: ECE 100 and ECE 110 and ECE 130.
4 Credits 1 Weekly Lecture Hour
6 Weekly Lab Hours

ECE 121 Early Childhood Education Laboratory II
This is the capstone course for the Early Childhood Education program of study. In this course, the student will synthesize their learning by functioning as a member of an instructional team in an approved early care and education program (nursery school, childcare, preschool, Head Start). A qualified in-service classroom teacher and the College's supervisor of the field experience carefully supervise the student's activity. A weekly seminar discusses successes, challenges and issues arising from this laboratory experience . 90 hours in the field experience is required. NOTE: Background clearances including FBI, PA Child Abuse and PA Criminal clearances and a Pennsylvania approved child abuse recognition and reporting training is required prior to enrollment in this course. Documentation of a negative TB test is also required. NOTE: Pre-reqs must be completed with grade of 'C' or better. College Academic Learning Goals Designations: Information Technology (TC) when taken with ECE 111, ECE 112, ECE 130, ECE 140 and ECE 201
Upon successful completion of this course, students should be able to:
Construct and implement lessons based on student's 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.
Construct and implement an integrated program that includes all content areas across the learning standards.
Use of methods that support children's 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 developmental considerations that are consistent with Pennsylvania's learning standards.
Document children's learning for families through classroom displays.
Observe, document and assess children's learning through effective use of digital assessment tools.
Create and compile a digital professional portfolio that demonstrates competencies in the NAEYC Professional Preparation standards and effective use of technology.
College Academic Learning Goal Designation: Critical Reasoning (CR), Information Technology (TC)
Prerequisites: ECE 111.
4 Credits 1 Weekly Lecture Hour
6 Weekly Lab 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. (10 hours of outside field observations either in the home or school will be required. NOTE: Students will need to have federal and state background clearances for observing children in a school setting) This course is a prerequisite for the ECE courses that follow. To meet this prerequisite, the student must earn a C or better. A final grade of D or lower will require retaking this course. College Academic Learning Goal Designation: Information Technology (TC) when taken with ECE 111, ECE 112, ECE 121, ECE 140 and ECE 201
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 a variety of settings in order to understand variation and exceptionality in individuals.
Use observation, documentation, and other appropriate assessment tools and approaches, including the use of technology in documentation, assessment and data collection.
Analyze the benefits and influence of technology use with very young children.
Apply their knowledge of child development by observing, recording and interpreting children's behavior for the purpose of program planning using appropriate technology tools for data collection.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

ECE 140 Integrated Curriculum and Assessment
This course will prepare the student to develop an integrated curriculum for preschool, kindergarten and primary age children based on the structure of the academic content areas and the early learning standards. This course will also explore the relationship between curriculum and assessment in providing high quality learning experiences and differentiating instruction. NOTE: College Academic Learning Goal Designation: Information Technology (TC) when taken with ECE 111, ECE 112, ECE 121, ECE 130, and ECE 201; Pre-reqs must be completed with grade of 'C' or better.
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.
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.
Research, analyze and synthesize information on Developmentally Appropriate Assessment and prepare a presentation using technology for key stakeholders.
Integrate curriculum across content areas.
Identify the goals, benefits, and uses of assessmentUtilize developmentally appropriate assessment strategies to promote positive outcomes for each child.
Use online assessment software to enter child assessment data and analyze this data to make curriculum decisions and differentiate instruction.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: ECE 130.
3 Credits 3 Weekly Lecture Hours

ECE 190 ECE Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE: All students must have the following prior to starting the internship: All students will be required to have Pennsylvania Child Abuse Clearance, Pennsylvania Criminal Clearance, FBI clearance, documentation of current immunizations, TB screening, two character references, and Child Abuse Recognition and Reporting certificate. There are additional fees to obtaining clearances and students may have to get their clearances renewed. Pre-requisites - To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
1 Credit

ECE 194 ECE Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE: All students must have the following prior to starting the internship: All students will be required to have Pennsylvania Child Abuse Clearance, Pennsylvania Criminal Clearance, FBI clearance, documentation of current immunizations, TB screening, two character references, and Child Abuse Recognition and Reporting certificate. There are additional fees to obtaining clearances and students may have to get their clearances renewed. Pre-requisites - To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
2 Credits

ECE 199 ECE Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE: All students must have the following prior to starting the internship: All students will be required to have Pennsylvania Child Abuse Clearance, Pennsylvania Criminal Clearance, FBI clearance, documentation of current immunizations, TB screening, two character references, and Child Abuse Recognition and Reporting certificate. There are additional fees to obtaining clearances and students may have to get their clearances renewed. Pre-requisites - To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
3 Credits

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. NOTE: College Academic Learning Goal Designation: Information Technology (TC) when taken with ECE 111, ECE 112, ECE 121, ECE 130 and ECE 140; Pre-reqs must be completed with grade of 'C' or better.
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.
Use of technology for communication with families that is ethical and effective.
Reflect on how theory, culture, values, ethics, communication and experience influence home, school and community partnerships.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: ECE 130 and EDU 220.
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. NOTE: Prerequisites: AAS or AS in ECE or related field OR completed 45 hours towards an AAS degree
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.
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. NOTE Prerequisites: AAS or AS in ECE or related field OR completed 45 hours towards an AAS degree.
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.
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. NOTE Prerequisites: AAS or AS in ECE or related field OR completed 45 hours towards an AAS degree.
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.
3 Credits 3 Weekly Lecture Hours

ECO - Economics

ECO 210 Macroeconomic Principles
This course is designed to help beginning economics students comprehend the principles essential for understanding the basic economizing problem and specific economic issues, such as, unemployment, inflation and the process by which prices, in competitive markets, are determined. Students will also study key aspects of International Economics, it's importance and impact on the domestic economy. This course will also assist students to understand and reason accurately and objectively about economic matters.
Upon successful completion of this course, students should be able to:
Understand the meaning of key economic terms and describe the categories of economic resources.
Apply Production Possibilities Curve Analysis to explain Increasing Opportunity Cost and Economic Growth.
Describe the laws of Demand and Supply and how they interact to determine market equilibrium.
Explain how the economy can be assessed through national income accounts (GDP, NI, PI, DI).
Describe four phases of Business Cycle and different types of unemployment and how to calculate the Unemployment rate.
Describe different types of inflation and hyperinflation and their impact on economy.
Describe how Aggregate Demand and Aggregate Supply model is used to analyze economic fluctuations.
Describe comparative advantage and demonstrate how specialization and trade will increase nation's output and contribute to Economic Growth.
Describe different types of trade restrictions and arguments for and against free trade.
Identify and evaluate the economic consequences of different trade policies.
Understand how exchange currency market works and how exchange rates are determined.
Assess the significance of international trade and finance for the US 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.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

ECO 220 Microeconomic Principles
Microeconomics is a course designed to help beginning economics students comprehend the principles essential for understanding the basic economizing problems, 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 and Monopolistic Competition. They will study some key aspects of International Economics, its importance and impact on the domestic economy.
Upon successful completion of this course, students should be able to:
Explain how elasticity and utility modify goods allocations.
Relate short-run and long-run cost 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 rate and profit.
Explain the 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 US and the world economics.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
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 children's 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 student's 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. NOTE: Students are expected to have basic knowledge of computer applications, have the ability to use an internet browser and have internet access.
Upon successful completion of this course, students should be able to:
Demonstrate knowledge of computers, networking, the Internet and World Wide Web as they relate to PK-college level education.
Discuss and critique issues related to use of computers in education, including security, equity, copyright and ethics of using the Internet in the classroom.
Identify and demonstrate the best practices associated with online materials, assessments, and evaluation.
Integrate technology in curriculum planning and in lesson delivery (PDE competency).
Develop an 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.
Demonstrate the ability to access needed information effectively and efficiently.
Analyze administrative educational policies and properly incorporate and apply those policies when deisgning course assignments.
Identify the ethical, legal and socio-economic issues surrounding information and information technology.
Demonstrate an understanding of the research process by developing a research question, search strategy, and select appropriate research tools and resources.
College Academic Learning Goal Designation: Information Literacy (IL), Information Technology (TC)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

EDU 207 Foundations of Literacy PK-4
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 word 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.
Prerequisites: 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. NOTE: Students must have completed pre-reqs 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
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 effect 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 Engish 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.
Prerequisites: ECE 130 or EDU 110.
3 Credits 3 Weekly Lecture Hours

EDU 215 Primary Grade Lab and Seminar
This course will provide an orientation to various aspects of teaching in K-4 schools. Topics will include observation and use of assessment strategies and tools, planning developmentally and culturally appropriate curriculum, planning, effective instruction, classroom management strategies, discipline, and creating a responsive and engaging classroom environment the structure of the school. Field experiences will be related to course topics. Students will complete 60 hours of observation in the field. NOTE: Students must possess all background clearances including FBI Fingerprint, Pa Criminal, and Pa Child Abuse. In addition, students must have a certificate of completion for the Recognizing and Reporting Child Abuse: Mandated and Permissive Reporting in Pennsylvania Online Training. Schools will require clearances prior to be the field placement. Additional fees are required. NOTE: Prerequisite: ENG 110 with grade of 'C' or higher.
Upon successful completion of this course, students should be able to:
Design classrooms, K - 4, that demonstrate appropriate use of indoor, physical space and materials; are educationally focused, respectful, and supportive to all children.
Design classrooms, K - 4, that are inclusive for diverse learners, including differences in age, development, culture.
Illustrate the use of Pennsylvania Learning Standards and implement lessons based on students' 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.
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.
Analyze the connection between classroom arrangement and creating a positive climate for learning that leads to positive learning outcomes for students emphasizing the importance of engaging families in their child's education.
Observe children and record behavior using authentic assessment strategies in order to understand the meaning and degree of variation and exceptionality among individuals.
Analyze the connection between classroom materials, learning standards, assessment, and instruction.
Use classroom assessment tools to inform teaching strategies.
Students will exhibit professional behavior aligned with NAEYC's Code of Ethical Conduct.
Prerequisites: ENG 100 and (EDU 110 or ECE 130).
4 Credits 4 Weekly Lecture Hours

EDU 220 Introduction to Special Education
This course will provide an introduction to the field of special education, major provisions of special education law, and the legal mandates of the teacher serving children with disabilities in the least restrictive setting. It will also review the major needs of students with disabilities, including the effects of family demographics. Emphasis will be placed on working within special education team structures, recognizing inclusive practices, and discussing the various roles of professionals. NOTE Prerequisite: 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 on-line.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of identification, characteristics of different types of disabilities, as well as effective evidence-based instructional practices and adaptations.
Demonstrate understanding of the legal rights and responsibilities of the teacher for special education referral and evaluation and the rights and procedural safeguards that students are guaranteed.
Demonstrate an understanding of possible causes and implications for the over-representation of minorities in special education so as not to misinterpret behaviors that represent cultural, linguistic differences as indicative of learning problems.
Demonstrate and understanding of the components of the Individualized Education Plan (IEP) process, with emphasis on understanding measurable goals based on present levels, specially designed instruction, adaptations, accommodations, supplementary aids and services, and supports for school personnel.
Identify essential concepts, best-practices and strategies for serving students with IEPs.
Prerequisites: ENG 112 and PSY 140.
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, nomographs, empirical equations and graphical calculus.
Create and plot computer-aided drawings.
Solve individual and group preliminary design projects.
Prerequisites: MAT 150 or MAT 140 or MAT 151. Appropriate placement test scores may be accepted.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
1 Credit 1 Weekly Lecture Hour

EGR 190 Engineering Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE: Prerequisites: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in the EGR curriculum (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

EGR 194 Engineering Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE: Prerequisites: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in the EGR curriculum (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

EGR 199 Engineering Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE: Prerequisites: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in the EGR curriculum (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits 3 Weekly Lecture Hours

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.
Prerequisites: 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 this 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.
Prerequisites: EGR 200.
Corequisites: 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 Kirchoff's Laws, lumped-circuit analysis using matrix algebra, controlled and independent sources, power and energy, and second-order time-domain techniques (including singularity functions, convolution and introductory state-variable techniques). Theory will be illustrated by laboratory and class assignments.
Upon successful completion of this course, students should be able to:
Set up and solve circuit problems using mesh analysis.
Set up and solve circuit problems using nodal analysis.
Set up and solve for the transient response of first-order and second-order circuits.
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.
Prerequisites: PHY 132.
Corequisites: MAT 261.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

EGR 220 Engineering Thermodynamics
Engineering Thermodynamics is an introductory one-semester course with lecture, demonstrations, and computer simulations, designed for engineering and science students. Major topics include: concepts of thermodynamics; pressure; temperature; heat and heat transfer; properties of substances; density; extensive and intensive properties; First Law of Thermodynamics and its application; Second Law of Thermodynamics and its application; 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. NOTE: Recommended Pre-req MAT 261
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.
Prerequisites: CHE 110 and MAT 161 and PHY 132.
3 Credits 3 Weekly Lecture 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 find 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 US 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 US, 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

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.
Corequisites: 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 Lab 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.
Prerequisites: EGY 101 and (MAT 111 or MAT 120 or MAT 135 or MAT 151) and TME 115.
Corequisites: PCT 100 and (PHY 101 or PHY 107).
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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).
Prerequisites: TME 115 and TEL 101.
Corequisites: TEL 102 and (CHE 106 or CHE 101).
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: IST 101 and IST 105 and IST 200 and PCT 100 and PCT 112 and TME 115.
Corequisites: EGY 101.
2 Credits 2 Weekly Lecture Hours

ELT - Electrical Occupations

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.
Prerequisites: ELT 101 or ELT 114.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ELT 110 Introduction to Electricity
This introductory course introduces students to the fundamental theories and principles of electricity. These theories and principles include voltage, current, magnetism, Ohm's Law, inductance, capacitance, and resistance, as well as the basics of DC circuits, their applications, and associated symbols. The course emphasizes safe working procedures in a construction environment.
Upon successful completion of this course, students should be able to:
Describe the competitive origins of the infant electric and gas industries in the late 1800s and early 1900s.
Describe the political, social and economic issues that led to industry regulation.
Describe the development of large public power electric systems.
Discuss the impact of siting and environmental issues within the United States and in the Delaware Valley.
Evaluate the impact of moving to a partially deregulated environment.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ELT 112 Electrical Code
This course is designed to help students read and understand the National Electrical Code. The National Electrical Code is the basic code that governs all electrical installations. The course teaches students how to locate code information in Code Manual, as well as how to interpret and apply the appropriate code to all facets of the electrical installation.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of the National Electrical Code.
Apply the NEC index in referencing an electrical problem or concern.
Identify codes and/or tables applicable to various electrical situations.
Apply minimum Code requirements to a floor plan of a residence.
2 Credits 2 Weekly Lecture Hours

ELT 114 Residential Wire
This course introduces students to the theory and practice of residential wiring. Students learn how to complete new house wiring, including the wiring of lighting receptacles, major appliances, alarm systems, telephone, television, and an electrical service. The course stresses National Electric Code compliance.
Upon successful completion of this course, students should be able to:
Demonstrate knowledge of the general requirements for residential rough-in wiring.
Apply NEC requirements in completing wiring tasks.
Demonstrate understanding of the difference between grounded and ungrounded conductors.
Demonstrate knowledge of electrical services, overhead services, service drop, and service lateral.
Layout and install cable and make connections.
Demonstrate competence in installing basic electrical services.
Demonstrate safe electrical practices.
Prerequisites: ELT 110.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

ELT 116 Advanced Electrical Wire
This course teaches students more complex residential electrical installations. Students learn additional wiring methods for single family and multi-family dwellings that include load calculations, service entrance sizing, proper grounding techniques, and associated safety procedures.
Upon successful completion of this course, students should be able to:
Install conduits, wiring, and electrical distribution equipment associated with residential electrical installations.
Identify and apply the criteria for selecting service panel boards and feeder sizes.
Apply the NEC requirements to the intended use presented by engineering drawings.
Calculate feeder loading and determine the minimum feeder conductor size and rating of over-current protective devices.
Tabulate materials required to install an electrical rough-in.
Lay-out an electrical system for a new house.
Prerequisites: ELT 114 or ELT 101.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

ELT 118 Troubleshooting and Old Work Wiring
This course introduces students to the issues related to completing electrical work on old houses, as well as doing troubleshooting and preventive maintenance on residential buildings. Students learn how to rewire different areas of old houses properly, with minimal damage to the building, as well as wire major house additions. Additionally, students learn how to troubleshoot electrical problems.
Upon successful completion of this course, students should be able to:
Identify issues involved in completing work on old house wiring.
Evaluate electrical circuits in older homes.
Perform basic circuit checks for shorts, opens, and ground faults.
Perform continuity and resistance checks on relay coils and contacts, overloads, fuses, circuit breakers, switches, and other control circuit components.
Wire and troubleshoot basic electrical control circuits to develop a logical, systematic approach to troubleshooting.
Prerequisites: ELT 116 or ELT 205.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

ELT 190 Electrical Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

ELT 194 Electrical Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Prerequisites: ELT 110 and ELT 112 and ELT 114 and ELT 116 and ELT 118 and ELT 206 and ELT 208.
2 Credits

ELT 199 Electrical Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

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.
Prerequisites: ELT 102.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: ELT 201.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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, students 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050) and TCC 111 and TEL 101 and IST 105. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 mechanical equipment.
Discuss event driven sequencing as it relates to the input and output terminals of the PLC.
Compare the operations 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 a mechanical environment.
Use PLC diagnostic equipment.
Diagnose a motor control program in both manual and automatic modes.
Analyze the consequences of changing a PLC program on the system being controlled.
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.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

ELT 206 Commercial Wire
This course provides an overview 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.
Upon successful completion of this course, students should be able to:
Demonstrate the application of commercial building plans and specifications and interpret electrical symbols.
Demonstrate an understanding of installation requirements for commercial wiring.
Compute the lighting watts per square foot for a commercial building.
Identify types of lighting fixtures used in commercial work.
Demonstrate knowledge of transformers, disconnecting devices, service entrances and metering configuration in a commercial building.
Calculate loads for a retail store, office building, and both single and multi-family residences.
Prerequisites: ELT 116 or ELT 205.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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 to sit for the industry certification. The certification is not included in the course. NOTE: Alternative Pre-requsite Certified Electrical License
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 and 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 and sizing, and PV system labeling.
Identify PV system monitoring and maintenance needs, and specify service procedures and schedule to keep a 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 through 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 capacity 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 and size, and specify location and text of all NEC required labels.

EMER - Emergency Management and Planning

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, students should be able to:
Define the terms and regulatory framework of incident management.
Identify the roles and responsibilities associated with incident management.
Differentiate between Incident Command and Unified Command.
Recognize the need for, and the role of, various functionaries in the incident management system.
Define the terms "teamwork" and "cooperation" in incident management.
Identify the consequences of a poor or ineffective incident management structure.
Recognize the need for, and use of, incident management.
Describe how incident management is applied in various emergencies.
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 Lab 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.
Prerequisites: EMER 105 or EMS 204.
3 Credits 2 Weekly Lecture Hours
1 Weekly Lab Hour

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.
Prerequisites: EMER 105 or EMS 204.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: EMER 105 or EMS 204.
1 Credit 1 Weekly Lecture Hour

EMS - Emergency Med Services

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. NOTE Co-requisites: FEMA Incident Command System Levels IS100 and IS700. Ten patient assessment contacts
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.
Prerequisites: (REA 050 or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
9 Credits 7 Weekly Lecture Hours
4 Weekly Lab 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. NOTE Requirements:: Current Pennsylvania Emergency Medical Technician certification. Students currently certified (without restrictions or administrative actions) 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 students physician using the physical form provided by DCCC; Clear Pennsylvania State Police criminal background check as mandated by PA Bureau of EMS; Clear child abuse clearance as mandated by the PA Bureau of EMS; Clear FBI background clearance including fingerprinting; Clear criminal background from state of residence.
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.
6 Credits 3 Weekly Lecture Hours
6 Weekly Lab 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. NOTE Requirement: Certification as a current Emergency Medical Technician and current CPR provider; Pre-requisites must be completed with grade of 'C' or better.
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.
Prerequisites: EMTP 100.
6 Credits 3 Weekly Lecture Hours
6 Weekly Lab 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. NOTE Requirement: Certification as a current Emergency Medical Technician and current CPR provider; Pre-requisites must be completed with grade of 'C' or better.
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.
Prerequisites: EMTP 101.
5 Credits 3 Weekly Lecture Hours
4 Weekly Lab 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. NOTE Requirement: Certification as a current Emergency Medical Technician and CPR provider; Pre-requisites must be completed with grade of 'C' or better.
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.
Prerequisites: EMTP 101.
Corequisites: EMTP 102 and EMTP 104 and EMTP 105.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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. NOTE Requirements: Certification as a current Emergency Medical Technician and CPR provider; Pre-requisites must be completed with grade of 'C' or better.
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 gastro-urinary 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.
Prerequisites: EMTP 101.
Corequisites: EMTP 102 and EMTP 103 and EMTP 105.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Pre-requisites must be completed with grade of 'C' or better.
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.
Prerequisites: EMTP 101.
Corequisites: EMTP 102 and EMTP 103 and EMTP 104.
2 Credits
4 Weekly Lab 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. NOTE Requirement: Certification as a current Emergency Medical Technician and CPR provider; Pre-requisites must be completed with grade of 'C' or better.
Upon successful completion of 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.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: EMTP 102 and EMTP 103 and EMTP 104 and EMTP 105.
Corequisites: EMTP 201 and EMTP 205.
8 Credits 0 Weekly Lecture Hours
16 Weekly Lab 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. NOTE Requirement: Certification as a current Emergency Medical Technician and CPR provider; Pre-requisites must be completed with grade of 'C' or better.
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.
Prerequisites: EMTP 102 and EMTP 103 and EMTP 104.
Corequisites: EMTP 200 and EMTP 205.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Pre-requisites must be completed with grade of 'C' or better.
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.
Prerequisites: EMTP 102 and EMTP 103 and EMTP 104 and EMTP 105.
Corequisites: EMTP 200 and EMTP 201.
2 Credits 0 Weekly Lecture Hours
4 Weekly Lab Hours

ENG - English

ENG 050 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. NOTE: 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.
Prerequisites: ESL 044. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

ENG 099 ALP English
ENG 099 provides individualized instruction and regular practice in writing essays for college audiences and critically reading and understanding college-level texts. Specific attention will be paid to effective reading strategies and a recursive understanding of the writing process. This course is part of DCCC's Accelerated Learning Program, which enables students to complete developmental coursework in English while simultaneously enrolling in ENG 100. This program enables students to develop their skills quickly and to complete their college English requirements faster than with the typical sequential approach to these classes. Students wishing to enroll in college level courses with ENG 099, have the option to enroll in any of the following courses: HIS 110, HIS 120, HIS 150, HIS 160, HUM 160, SOC 110 or SOC 120. NOTE: Corequisite - Every section of ENG 099 will be linked to a section of ENG 100 taught by the same instructor. Students who register for a section of ENG 099 must simultaneously register for the corresponding ENG 100 section.
Upon successful completion of this course, students should be able to:
Practice effective writing strategies for all steps of the writing process, including invention, planning, drafting, revising, and editing.
Write for various contexts with an awareness of audience.
Write thesis-driven essays that are clearly organized and developed with appropriate evidence.
Demonstrate critical reading skills by annotating, analyzing, and thoughtfully responding to a variety of challenging texts.
Demonstrate critical reading, thinking, and writing in various rhetorical situations and make appropriate rhetorical choices for given writing tasks.
Demonstrate proficient comprehension of and a critical assessment of college-appropriate texts using strategic and critical reading.
Practice basic research skills such as developing a research question, accessing reliable sources, and evaluating content.
Manage commonly experienced obstacles to effective writing, such as procrastination and writing-related anxiety.
Demonstrate intellectual engagement through regular, punctual attendance and active, in-class participation.
Concurrent: ENG 100
3 Credits 3 Weekly Lecture Hours

ENG 100 English Composition I
This course reviews the principles of composition, including rhetoric, grammar and usage. It emphasizes critical thinking, the recursive nature of writing, the writing of analytical essays, and the application of information literacy skills.
Upon successful completion of this course, students should be able to:
Apply college-level critical thinking and writing in various rhetorical situations.
Compose original, thesis-based essays with cogent, well-supported evidence.
Use appropriate rhetorical techniques for a specific writing task.
Demonstrate organizational skills in constructing an essay with an introduction, conclusion, and transitions.
Explore and evaluate appropriate academic databases to find credible primary and secondary sources.
Synthesize appropriate sources to produce a research paper with accurate documentation.
Employ prewriting, drafting, and revision strategies.
Apply formal conventions of standard English with respect to grammar, mechanics, and punctuation.
College Academic Learning Goal Designation: Critical Reasoning (CR), Information Literacy (IL), Written Communication (WC)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
3 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ENG 112 English Composition II: Writing About Literature
ENG 112 is a writing course emphasizing both literature and information literacy skills that reinforce 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. NOTE: Prerequisite ENG 100 requires grade of 'C' or better.
Upon successful completion of this course, students 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.
College Academic Learning Goal Designation: Critical Reasoning (CR), Information Literacy (IL), Written Communication (WC)
Prerequisites: 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 literacy 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, refworks), turnitin, and smarthinking.
Compose and present original literary analysis in both print and multimedia forms.
Prerequisites: ENG 100.
Corequisites: ENG 112.
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 this course, students 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.
Prerequisites: 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 (ENG130) 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 this 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.
Prerequisites: ENG 130.
3 Credits 3 Weekly Lecture Hours

ENG 205 Creative Writing: Introduction
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 course, 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 developed character that can move through a narrative structure.
Craft poetry that effectively employs sound, imagery and structure.
Examine and evaluate prose and poetry to create a body of polished work that demonstrates knowledge of the effectual elements of each genre.
Synthesize criticism and analysis to create dynamic poetry and prose.
Corequisites: 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/literacy 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.
Corequisites: ENG 112.
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.
Corequisites: 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 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 literary elements which produce the most success in prose.
Synthesize criticism and analysis to create dynamic and effectual works of fiction.
Corequisites: ENG 112.
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.
Corequisites: ENG 112.
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.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

ENG 220 British Literature I
This is a survey of British literature from the Anglo-Saxon era to the pre-Romantics with attention given to both major and marginalized works and writers.
Upon successful completion of this course, students should be able to:
Identify and discuss major authors, literary genres, literary devices and styles of writing in British literature from the medieval era to the pre-Romantic period.
Discuss British literary works by and about marginalized-underrepresented peoples in the context of their historical struggle and contemporary relevance.
Compose essays that analyze British literary works in relation to their social, economic, and historical contexts and/or critical perspectives.
Apply current information literacy techniques to develop multi-source research projects that follow MLA guidelines.
Prerequisites: ENG 112.
3 Credits 3 Weekly Lecture Hours

ENG 221 British Literature II
This is a survey of British literature from the Romantics to the Moderns with the attention given to both major and marginalized works and writers.
Upon successful completion of this course, students should be able to:
Identify and discuss major authors, literary genres, literary devices, and styles of writing in British literature from the Romantic period to the post WWII era.
Discuss British literary works by and about marginalized/under-represented peoples in the context of their historical struggle and contemporary relevance.
Compose essays that analyze British literary works in relation to their social, economic, and historic contexts and/or other critical perspectives.
Apply current information literacy techniques to develop multi-source research projects that follow MLA documentation guidelines.
Prerequisites: 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.
Prerequisites: ENG 112.
3 Credits 3 Weekly Lecture Hours

ENG 230 American Literature I
This is a survey of American literature from the colonial era through the end of the Civil War with attention given to both major and marginalized works and writers.
Upon successful completion of this course, students should be able to:
Identify and discuss major authors, literary genres, literary devices, and styles of writing in American literature from the colonial era to 1865.
Discuss American literary works by and about marginalized / underrepresented peoples in the context of their historical struggle and contemporary relevance.
Compose essays that analyze American literary works in relation to their social, economic, and historical contexts and/or critical perspectives.
Apply current information literacy techniques to develop multi-source research projects that follow MLA guidelines.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ)
Prerequisites: ENG 112.
3 Credits 3 Weekly Lecture Hours

ENG 231 American Literature II
This is a survey of American literature from 1865 to the present with attention given to both major and marginalized works and writers.
Upon successful completion of this course, students should be able to:
Identify and discuss major authors, literary genres, literary devices, and styles of writing in American literature from 1865 to the present.
Discuss American literary works by and about marginalized / under-represented peoples in the context of their historical struggle and contemporary relevance.
Compose essays that analyze American literary works in relation to their social, economic, and historical contexts and/or critical perspectives.
Apply current information literacy techniques to develop multi-source research projects that follow MLA guidelines.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ)
Prerequisites: 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 characteristics of early literature (the ancient world to the Renaissance) from Asia, North and South America, Europe, Oceania, and Africa as these relate to literary artifacts.
Discuss in writing how literature works in conversation across cultures by demonstrating an understanding of global and historical themes, influences, and styles as these relate to both specific cultural stories and to stories across cultures.
Compare and contrast literary form and content, including genres, authorship, and styles of writing, that allow us to differentiate and compare stories from across the globe.
Compose essays that analyze literary works, including those or marginalized or under-represented peoples, in relation to various social, economic and historic contexts, and/or aesthetic traditions.
Demonstrate an ability to analyze and/or synthesize secondary sources, use current information literacy techniques, and document sources according to MLA-style in the context of a multi-source project.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: ENG 112.
3 Credits 3 Weekly Lecture Hours

ENG 241 World Literature II
This course continues the balanced, selective study of great representative literary works from the Renaissance to the present day in their geographic, historic, socio-economic, and political contexts. Attention is given to genres, writing styles, and applicable critical approaches. The "emerging" literatures--works by women, colonials, post-colonials and those groups generally denied a voice--are studied in an attempt to enlarge the cannon and render it inclusive.
Upon successful completion of this course, students should be able to:
Identify and discuss major writers and their influences in and contributions to world literature.
Discuss dominant themes/genres/writing styles in the established and emerging literatures.
Identify major historical and philosophical influences of modern life as they are represented in literary artifacts.
Demonstrate in discussions and writing an awareness of the struggle of writers of the emerging literatures to find a voice, an audience, and a hearing.
Respond to the writers and literature encountered in the form of critical, analytical, and/or argumentative multi-source essays that employ current information literacy techniques and apply correct MLA documentation.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: ENG 112.
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 postmodern 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.
Prerequisites: 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 discussing the aforementioned topics.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

ENG 250 Children's Literature
This course is a critical and analytical study of a variety of texts that represent the many genres of children's literature. It will emphasize how children are influenced by literature and how children's literature reflects the values of the particular culture that produces it.
Upon successful completion of this course, students should be able to:
Recognize the characteristics of the different genres of children's literature.
Determine and apply criteria for what may be considered as quality children's literature.
Analyze literary elements such as theme, character, and setting.
Evaluate the contributions that illustrations can make to a text.
Identify literature as a product of a particular cultural climate.
Discuss critically issues of gender, ethnicity, culture, and the individual that are present in the texts.
Design and research a written project that relates to a student's particular interest in children's literature.
Prerequisites: ENG 112.
3 Credits 3 Weekly Lecture Hours

ESL - English as a Second Language

Students are placed in individual ESL courses through appropriate placement test scores and/or evaluation of previous coursework.

ESL 023 Elementary Grammar
This is a high beginning multi-skills course to practice and learn grammar in listening, speaking, reading and writing for everyday life and in college. Students must take this course with other ESL skills courses in writing (ESL 024), reading (ESL 025) and listening/speaking (ESL 026).
Upon successful completion of this 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 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.
Corequisites: ESL 024.
3 Credits 3 Weekly Lecture Hours

ESL 024 Elementary Writing
This course is for advanced beginners who can write basic sentences and have some knowledge of English sentence structure. The course covers basic grammatical structures and introduces students to simple paragraph writing as well as other types of writing needed in everyday life.
Upon successful completion of this 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.
Corequisites: ESL 023.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 025 Elementary Reading
This advanced-beginner course is designed to develop students' ability to use reading strategies and to expand vocabulary in order to understand simplified texts. Students will normally take this course with Elementary Writing (ESL 024) and Elementary Speaking/Listening (ESL 026). Two hours per week of tutoring are required.
Upon successful completion of this 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
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 026 Elementary Listening/Speaking
This is a course for advanced beginners who have some basic knowledge of English and some functional communicative ability (e.g.simple questions and answers on topics of everyday interest). Class time is devoted to speaking for everyday needs, grammar practice, pronunciation, intensive listening to short, simplified narratives and listening for specific information in extended narratives and conversations. Students normally take this course along with Elementary Writing (ESL 024) and Elementary Reading (ESL 025). The course also has two hours of lab time, which will provide students with additional listening practice.
Upon successful completion of this 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 (eg, weather forecasts).
Understand simplified, extended narratives (eg, lectures and dialogues).
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 033 Intermediate Grammar I
This course is a continuation of Elementary Grammar (ESL 023). Students practice grammatical structures through reading, writing, speaking and listening tasks in a classroom setting. This course is helpful for students who are fluent in English, but who need to develop the accuracy that is necessary for success in college. The course is also recommended for new international students who may have memorized grammar rules, but cannot apply them in conversational or academic situations.
Upon successful completion of this course, students should be able to:
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.
Prerequisites: ESL 023. Appropriate placement test scores may be accepted.
Corequisites: ESL 034.
3 Credits 3 Weekly Lecture Hours

ESL 034 Intermediate Writing I
This course is a continuation of Elementary Writing (ESL 024). Students write longer paragraphs and short essays using more advanced writing strategies such as narration, illustration and analysis. Frequent in-class writing and out of class assignments help prepare students for future academic writing in non-ESL classes.
Upon successful completion of this course, students should be able to:
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.
Prerequisites: ESL 024. Appropriate placement test scores may be accepted.
Corequisites: ESL 033.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 035 Intermediate Reading I
In this course, students expand their reading skills and vocabulary. Students should take this course along with Intermediate Writing I (ESL 034) and Intermediate Speaking/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.
Prerequisites: ESL 025. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 036 Intermediate Listening/Speaking I
This course is a speaking and listening course for low-intermediate ESL students. Students entering the course should be able to answer questions about their own lives, to expand a spontaneous narrative to three or four sentences. Class time is devoted to speaking in various social situations, the practice of grammar, pronunciation and listening for information in conversations and extended narratives. Students normally take this course with Intermediate Writing I (ESL 034) and Intermediate Reading I (ESL 035). Two hours of lab time weekly give students additional listening comprehension practice.
Upon successful completion of this course, students should be able to:
Use language functions appropriate for this level (eg 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.
Prerequisites: ESL 026. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 043 Intermediate Grammar II
This course is a continuation of Intermediate Grammar I (ESL 033). It is a multi-skills course in which students practice grammar in social and academic situations.
Upon successful completion of this 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.
Prerequisites: ESL 033. Appropriate placement test scores may be accepted.
Corequisites: ESL 044.
3 Credits 3 Weekly Lecture Hours

ESL 044 Intermediate Writing II
This course is designed for students who can write unified, well-supported paragraphs and short essays with few errors that affect readers' comprehension.
Upon successful completion of 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.
Prerequisites: ESL 034. Appropriate placement test scores may be accepted.
Corequisites: ESL 043.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 045 Intermediate Reading II
This course is designed for intermediate-level ESL students who need to build their vocabulary and reading skills so that they can, with the assistance of a dictionary, understand 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.
Prerequisites: ESL 035. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESL 046 Intermediate Listening/Speaking II
This course emphasizes the comprehension and production of longer segments of speech. Students entering the course should be able to extend a narrative to several sentences. The class covers speaking in everyday situations, conventions of speaking in academic settings (e.g., participating in class discussions) and pronunciation. Students normally take this course with Intermediate Reading II (ESL 045) and Intermediate Writing II (ESL 044). An additional two hours each week of lab time will provide extra listening practice.
Upon successful completion of this course, students should be able to:
Use different levels of politeness in a variety of situations.
Speak spontaneously at an extended level of discourse.
Organize and deliver a five to seven minute presentation.
Contribute to group problem-solving discussions.
Use listening strategies to understand the main points in longer narratives and conversation, some unsimplified.
Take notes on extended narratives.
Improve pronunciation and intonation.
Demonstrate grammatical accuracy in most everyday conversational situations.
Prerequisites: ESL 036. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESS - Earth & Space Science

ESS 100 Earth Science
This course is a general survey 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:
Analyze efforts to minimize the effects of natural hazards.
Explore how scientific evaluation can assess the dangers posed by natural processes through observation and risk analysis.
Explain the underlying geologic and atmospheric processes responsible for natural hazards such as volcanic eruptions, earthquakes, floods, and hurricanes.
Identify areas susceptible to natural hazards and infer which hazards have the potential to become natural disasters or catastrophes as a result of geographic or anthropogenic factors.
Develop an appreciation of the significance of natural hazard events through the application of natural hazard case studies.
Demonstrate techniques for solving problems in a collaborative, technology-rich laboratory environment.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESS 105 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. Students will conduct astronomical observations using software, telescopes, and star charts to study objects in the night sky. Practical observational activities are designed to foster a conceptual understanding of how objects from great distances are studied from the earth. The course is intended for non-science majors.
Upon successful completion of this course, students should be able to:
Explain what tools and methods are used by astronomers to make observations and gather information about the universe.
Describe the contributions made by early astronomers, and how it led to the current view of our universe.
Demonstrate an understanding of the origins, structure, and evolution of our solar system, stars, galaxies and the universe.
Investigate the possibility of life existing elsewhere in the universe.
Use star charts and/or planetarium software to survey the night sky and discover various celestial objects.
Use problem solving techniques to analyze and interpret data from student observations and/or astronomical observatories.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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, 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, students 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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: (REA 050 or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

ESS 112 Historical Geology
Historical Geology is the study of the Earth's origin and changing dynamics including the physical, chemical and biological processes. In a laboratory setting, students will explore the rock layers, fossil records and current geological processes. Student will gain an understanding of the interpretation of the Earth's Geologic history.
Upon successful completion of this course, students should be able to:
Discuss the concepts of geologic and apply to rock correlation.
Apply the concepts of stratigraphy as related to geologic time.
Describe the fundamental processes of sedimentary environments.
Understand the current thoughts of the origin and diversity of life.
Summarize the general theory of the evolution of flora and fauna.
Understand the Precambrian life and earth history.
Understand the late Paleozoic life and earth history.
Understand the Mesozoic life and earth history.
Understand the Cenozoic life and earth history.
Summarize the concepts and current thoughts of primate and human evolution.
Prerequisites: ESS 100 or ESS 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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. Recommended for those with less than 2 years High School French.
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.
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. NOTE: Alternate pre-requisite - two years of HS French.
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.
Prerequisites: FRE 101.
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. NOTE: Prerequisites: FRE 102 or three years of high school French or 1 year of college French.
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.
Prerequisites: FRE 102.
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. NOTE: Prerequisites: FRE 111 or four years of high school 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.
Prerequisites: 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:
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 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. NOTE: Pre-Requisite 6 cr. in Fire Science.
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. NOTE: Prerequisites: Fewer than two years of high school German.
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.
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. NOTE: Prerequisites: GER 101 or two years of high school German or 1 semester of college German.
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.
Prerequisites: 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 into the existing populations of the Americas through the period of the Civil War. Includes the cultural origins and initial interactions of African, European and Native American peoples in the Western Hemisphere and the initial phases of a global economy, British Colonization and the establishment of diverse cultures in North America, the Period of the American Revolution, Confederation and Constitution, the establishment of unique political, social and economic structures in the early Republic, cultural and political conflict between Free and Slave States, and the Civil War and Reconstruction.
Upon successful completion of this course, students should be able to:
Explore variables of race, ethnicity, class, sexuality, and religious background to demonstrate the diversity of American cultural development in colonizing America and the early history of the United States.
Discuss historical information regarding the foundation and formation of the United States to promote a global understanding of the interdependence of peoples and nations that can be used to create dialogue on meaningful and relevant events in their own place and time.
Develop analytical skills through an evaluation of cause and effect of events from pre-Colonization to the Civil War to suggest how and why events happen based upon historical fact sets.
Develop critical thinking skills through an explanation of the significance of historical information within varying contexts, theoretical models and methods.
Explain the difference between types of evidence and interpretation to give students a clear understanding of how to use evidence and commentary from primary and secondary sources to develop interpretive frameworks on a variety of information types.
Use social science methods and models to give students effective tools to compose their own interpretations in both oral and written formats.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
3 Credits 3 Weekly Lecture Hours

HIS 120 American History II
An inquiry into the history of the United States from the Reconstruction to the present; includes the process of reconstruction of the Union and the rise of Jim Crow, post-Civil War industrialization, immigration and urbanization, the Western frontiers, the emergencies of the Labor Movement, United States diplomatic history, the Progressive Era, World War I, post-war prosperity and the Great Depression, New Deal policy and diplomacy, World War II, the Cold War, Vietnam, Civil Rights Movement and various social movements of the 1960s, the America in the a globalizing world in the latter part of the 20th century.
Upon successful completion of this course, students should be able to:
Develop critical thinking skills to analyze the political, economic, diplomatic and military changes that have occurred from the Reconstruction to the present.
Explore variables of Race, Ethnicity, Class, Sexuality, and Religious Background to demonstrate the Diversity of American Cultural Development.
Extract facts and commentary from primary and secondary sources to compose historical interpretations in both oral and written formats.
Discuss history historical information to promote an intellectual capacity to create dialogue on meaningful and relevant events in their own place and time.
Analyze the development of the United States in a global framework.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
3 Credits 3 Weekly Lecture Hours

HIS 150 World Civilizations 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 this course, students should be able to:
Think critically and analytically about the development and nature of separate world cultures created over several centuries.
Explain the creation of the political, economic, social, and religious foundations and stratification of civilization in the ancient period to 1500.
Understand how societies devised different solutions to key difficulties in forging a durable civilization.
Comprehend the role of geography and environment in the development of diverse civilizations.
Understand of the roots of the modern world through the examination of ethnic, racial, religious, gender, and socio-economic diversity of ancient world civilizations.
Discuss the implications of early aspects of globalization in world history.
Utilize information literacy of a variety of source material to examine and discuss world history.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
3 Credits 3 Weekly Lecture Hours

HIS 160 World Civilizations 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 this course, students should be able to:
Think critically and analytically the development and nature of separate world cultures created over several centuries.
Understand the creation of a global community from 1500 through the twentieth century.
Explain how societies devised different responses to globalization.
Understand the creation of the contemporary world through analysis of the major historical themes from 1500 through the twentieth century.
Comprehend the ethnic, racial, religious, gender, and socio-economic diversity of global societies since 1500.
Utilize information literacy and a variety of source material to examine modern world history.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
3 Credits 3 Weekly Lecture Hours

HIS 190 History Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. pon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE Prerequisites: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
1 Credit 1 Weekly Lecture Hour

HIS 194 History Internship (2 Credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. pon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE Prerequisites: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
2 Credits 2 Weekly Lecture Hours

HIS 199 History Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE Prerequisites: To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
3 Credits

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. Students will be introduced to scholarly writings and research about the primary and secondary sources dealing with the American Civil War and Reconstruction.
Upon successful completion of this course, students should be able to:
Understand the causes, major events, and ramifications of the American Civil War and Reconstruction.
Think and write critically and analytically about the political, social, diplomatic and economic issues concerning the American Civil War and Reconstruction, its causes, and its outcomes, with an emphasis upon the concepts of Modern War and Total War.
Utilize information literacy to become familiar with scholarly literature and identify differing points of view on controversial political, social, diplomatic, and economic topics pertaining to the American Civil War and Reconstruction.
Utilize information literacy to identify, read, comprehend and synthesize primary and secondary sources dealing with the political, social, diplomatic, and economic aspects of the American Civil War and Reconstruction.
Evaluate the successes and failures of the American Civil War and Reconstruction with emphasis upon their significance in the issues of race, politics, and culture in American today.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 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.
Upon successful completion of this course, students should be able to:
Demonstrate an 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; with an emphasis upon the concepts of Modern War, Total War and Global War.
Utilize information literacy to become familiar with scholarly literature and identify differing points of view on controversial topics pertaining to the Great War.
Utilize information literacy to identify, read, comprehend, and synthesize primary and secondary sources dealing with the Great War.
Recognize how the Great War still resonates in the today's global issues.
College Academic Learning Goal Designation: Critical Reasoning (CR), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

HIS 225 History of the Second World War
The purpose of this course is to familiarize students with the major causes, events, and ramifications of the Second World 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 Second World War.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of the causes, major events, and ramifications of the Second World War.
Think and write critically and analytically about issues concerning the Second World War, its causes, and its outcomes; with an emphasis upon the concepts of Modern War, Total War, and Global War.
Utilize information literacy to become familiar with scholarly literature and identify differing points of view on controversial topics pertaining to the Second World War.
Utilize information literacy to identify, read, comprehend, and synthesize primary and secondary sources dealing with the Second World War.
Recognize how the Second World War still resonates in today's global issues.
College Academic Learning Goal Designation: Critical Reasoning (CR), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

HIS 235 20th Century World History
Twentieth Century World History is a course where students will closely examine many of the major events that have played a role in forming much of the contemporary world. Liberalism, Capitalism, Socialism and various forms of Nationalism will be explored through events like World War I and World War II, the Cold War and Post-Colonial liberation movements to show the progress and poverty of human civilization in its latest developments. The course ends with topics like the Internet and the War on Terror to shed light on the dawning of the 21st century.
Upon successful completion of this course, students should be able to:
Develop critical thinking skills in the analysis and evaluation of global cultural, political, diplomatic, economic and military events that have occurred in the 20th century.
Understand variables of race, ethnicity, class, sexuality, and religious background to understand issues of global diversity in events such as the Holocaust, the Russian Revolution and Islamic Jihadism.
Comprehend the differences between various forms of evidence and commentary through examining some of the most important primary sources of the 20th century , which will enable the student to develop historical interpretations in both oral and written formats.
Discuss historical information and ideas from disparate sources like Woodrow Wilson's Fourteen Points to Adolph Hitler's writings in Mein Kampf to promote an intellectual capacity to create dialogue on meaningful and relevant events in their own place and time.
Analyze the development of human behavior in a global framework, and note the global impact of a variety of topics from World Wars, to the use of fossil fuels to the internet.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 this 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

HRM - Hotel/Restaurant Management

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.
Prerequisites: ENG 050 and REA 050 and (ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours
3 Weekly Lab 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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.
Prerequisites: 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 interdepartmental 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.
Prerequisites: 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.
Prerequisites: HRM 100.
3 Credits 3 Weekly Lecture Hours

HRM 199 Hotel and Restaurant Management Internship CSEL
Internship and/or College Sponsored Experiential Learning (CSEL) provides qualified, enthusiastic students with opportunities to receive academic credit for work experience in the hospitality field. Internships and/or CSEL combine classroom theory with practical, real-world employment experiences. Students participating in this 180 experience will earn 3 college credits for this experience. NOTE To be eligible for an internship, students must: Have earned 21 or more credits at DCCC Have an overall average grade point average of 2.5 Obtain written recommendation from a DCCC instructor of Hotel and Restaurant Management or Culinary Arts Submit an updated resume and application for this course to the Office of Student Employment Services
Upon successful completion of this course, students should be able to:
Develop, observe and perform technical skills as required in the hospitality work position assigned by employer.
Develop, observe and perform interpersonal skills as required in the hopitality work position assigned by employer.
Observe and use the equipment and technology used in the hospitality work position assigned by employer.
Submit written reports and/or journals as required by the Office of Student Employment Services and supervising faculty.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: 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, students 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.
Prerequisites: HRM 100.
3 Credits 3 Weekly Lecture Hours

HUM - Humanities

HUM 100 Introduction to Visual Arts
This course introduces students, through a broad overview, to the nature of art, the people who make art, forms of art takes and the cultural significance of art. Students consider the various roles of artists and how those roles evolved historically within a socio-cultural context. Additionally, students will learn how global concerns affecting marginalized populations, politics, economics, technology, and the environment impact the art that is produced. A thorough introduction to the elements and principles of design will lay the foundation for visual literacy on which students will analyze and critique various disciplines including drawing, painting, photography, film, video, sculpture, architecture, crafts, and environmental design. Issues concerning aesthetics, creativity, and perception will also be addressed in this course. NOTE: Alternate pre-requisite - permission of the instructor.
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.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

HUM 110 Early Cultures through the Middle Ages
This survey course introduces students to various cultural constructs within a global context. Students will examine and discuss similarities and differences of socio-cultural, historical gender, religious and environmental struggles from prehistoric times through the middle ages. Literature, the visual/performing arts and archaeology practices will be used to study social equity, economic issues, and basic theories of the early human experience. Furthermore, this course will help students gain an understanding and critical awareness as they experience the broader world.
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 per-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.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

HUM 120 Renaissance Humanism to Twenty-First Century Globalism
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-Modem (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.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

HUM 121 Myth
This writing-intensive course surveys ancient and modern world myths that still have an impact on our self-concepts and/or inform our ideas of society, power, and social structure. Narrative myths are studied as well as their interpretations in visual art and music. Beginning with a focus on Babylonian and Egyptian mythology, the course uses literature, art, music and film to evaluate mythology's place in helping us to understand the human condition and in understanding how humans perceive and structure society. Readings vary from semester to semester, but will include stories from major world mythologies, various geographic regions, and various historical periods, for example Egyptian, Mesopotamian, Greek, Roman, Celtic, Germanic, Asian, North and South American, African, and Australian traditions.
Upon successful completion of this course, students should be able to:
Analyze and interpret myths to gain an understanding of how they function and change within/across historical contexts, societies, groups, and cultures.
Identify and paraphrase mythological themes and motifs that are universal across world cultures.
Identify how mythic stories reveal and support social structures and cultural values.
Compare aspects of myth-based fiction as seen in film, novels, popular culture, and television.
Identify versions of myths in rituals, visual art, and music.
Analyze in writing and discussion the differences between the original myths and their current manifestations.
Demonstrate the concept of "storytelling" rights as these relate to power and prestige.
Discuss in writing how myths/stories can construct ideas about race, socio-economic status, ethnicity, age, religion, gender, and sexual orientation and how stories can be used to institutionalize inequities.
Using elements of the writing process, produce a well-documented, well-researched final paper on an assigned topic in mythology.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ), Global Understanding (GU), Written Communication (WC)
Prerequisites: ENG 100.
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. NOTE: Alternate pre-requisite - permission of instructor.
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.
Prerequisites: 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.
Prerequisites: 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: Judaism, Christianity, Islam, Hinduism and Buddhism. We will read, research and discuss the historical, ethical and spiritual foundation of each religion, its beliefs and practices, in order understand its place in the perennial search for Truth and its relevance in the world today. The goal of this course is to set the stage for authentic inter-religious dialogue to prevent religious conflict and dogmatic discrimination.
Upon successful completion of this course, students should 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 practices of each of these religions.
Analyze the inter-relative or conflicting theological, social and historical tenets of the five religions discussed from a global perspective.
Recognize how the tenets or beliefs of each religion fostered or hindered integration or separation within their cultural background and in comparison to the other religions discussed.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
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 Mohommed, 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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. NOTE: Recommended Pre-Req - HUM 160
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.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

HUM 205 Latino American Culture
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

HUM 212 The Art and Architecture of Renaissance Florence
Through an experiential approach, students will study the Renaissance as it flowered in Florence, the Italian city most associated with the birth of that cultural/historical era and its emphasis on humanism. Students will be introduced to the landmarks of Florentine history from its Roman beginnings to the Sixteenth Century. The study of Renaissance art and architecture will begin with an over-view of the ideas central to the Classical world and end with the transition to Mannerism. Classroom lectures will be the springboard to the onsite experience of art/architecture in both sacred and secular places. In addition to viewing art in museums and churches, students will be introduced to well- known cultural artifacts that mirrored everyday life in the palazzo as well as the more common Renaissance home. The changing role of the artist in society , the larger themes and purposes of art, the vocabulary of art and the principles of design will be topics of discussion, study and practice. The course is part of a study abroad experience. Living in Florence will provide students with a first- hand knowledge of the Florentine people who created part of the Italian culture. NOTE: Alternate pre-req - Permission of instructor.
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.
Define the terms "classical antiquity".
Define the term "Renaissance" and articulate exactly what was reborn.
Understand how Renaissance architects were inspired by the "language and principles of classical architecture".
Trace the impact of classical humanism on Renaissance art, architecture and culture in general.
Understand the struggle between the Guelphs and the Ghibelines and their impact on Florence and Siena.
Explain the evolution of the guild system and its power in Renaissance Florentine politics, and the significance of Or San Michele.
Understand the importance of the precursors of the Renaissance: Cimebue, Sts.
Dominic and Frances, Nicola and Giovanni Pisano, Duccio di Buoninsegna, Dante Alighieri, Giotto, Martini, Lorenzetti, Orcagna, and Andrea da Firenze.
Define the following common terms in architecture and identify them in buildings both sacred/secular: arch, dome, post and lintel, cupola, colonnade, capital, entablature, flutes, shaft, Latin Cross, choir, transept, sacristy, coffered ceiling, side aisles, pendentives, bays, niches, facade, balustrade, cantilever, pilaster, loggia, nave, the Orders, round arch and vault, pointed arch.
Trace the rise of the architect from the cathedral mason/carpenter.
Articulate the importance of Vitruvius and his treatise on architecture.
Recognize the visual elements and the principles of design and be able to use them in a limited written analysis of paintings and sculpture.
Understand the geographical and political framework of the Italian city-states and their competiveness.
Explain the "casiato" as a source of information about artists and their patrons.
Identify major architectural and sculptural achievements in Florence 1400-1460.
Identify major artists and their paintings in Florence 1400-1460.
Identify the major works of Leonardo da Vinci, Michaelangelo and Raphael in the late 15th Century (Florence and Rome).
Demonstrate a basic understanding of Brunelleschi's perspective system.
Articulate the difference between linear perspective and atmospheric perspective.
Demonstrate a broad understanding of the Renaissance genius as a phenomenon in Renaissance Italy.
Explain basic social, cultural, political and geographical conditions that caused the arts to flourish in Florence.
Understand the chronological/historical development of art in Florence through both a study of theory and repeated encounters with the art on-site or in museums.
Articulate the controversy over the impact of the Black Death on the art that

HUM 295 Mindfulness Education and Stress Reduction for College Students: The Art of Breathing
This is an inter-discplinary, co-taught course that offers a systematic approach to stress reduction. It is also designed to help students to learn, study, experience and evaluate the numerous benefits of mindfulness practice, such as enhanced critical thinking, improved academic abilities, conflict resolution, increase in personal effectiveness in dealing with life stressors particular to college students. The course is taught by a team of humanities and nursing faculty and will include mindfulness practices, body work (yoga, Tai Chi, Chi Ghong), scientific/clinical neurobiological data collection and evaluation and research on the connection between body and mind, as well as the historical and philosophical roots of mindulness practice. Particular attention will be paid to teaching to reduce test anxiety, especially for high status testing for professional certification such as PRAXIS and NCLEX. Note: This course is a pilot/ special studies course that may or may not transfer. This course cannot be required as a prerequisite course or a progam course. One section of this course will be offered in Fall, 2016, Spring, 2017 and, Fall, 2017
Upon successful completion of this course, students should be able to:
Explain the nature of mindfulness and describe methods to practice it.
Identify theories of stress reduction.
Research and understand the historical roots and philosophy of mindfulness.
Use bodywork techniques for stress reduction.
Investigate the connections between well-being and mindfulness.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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, social work or 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 social work 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.
Prerequisites: ENG 100 and 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 will provide 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 will be 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.
Corequisites: HVA 104 and (REA 050 or ENG 099 or REA 075).
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

HVA 101 Introduction to Refrigeration and Air Conditioning
This course will cover 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:
Demonstrate appropriate procedures for attaching refrigeration manifold to a refrigerator system.
Position compressor service valves for variety of operations in refrigeration and air conditioning systems.
Demonstrate knowledge of the functions of the various parts of refrigeration systems and refrigerant cycles.
Interpret pressure temperature charts and pressure-enthalpy relationships.
Demonstrate understanding of piping layout and the relevant application considerations.
Troubleshoot refrigerant problems.
Apply computations for heat loss and heat again.
Conduct operational procedures such as pump down for refrigeration and air conditioning systems.
Demonstrate awareness of workplace safety principles and practices.
Prerequisites: HVA 100.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

HVA 103 Advanced Refrigeration and Air Conditioning
This course provides students with a background and understanding of residential, light and commercial refrigeration design, installation as well as service. The course materials will also address troubleshooting techniques of components with special emphasis on refrigerant control devices, compressors, reducing valves and dryers. Air conditioning fundamentals to be covered shall include psychrometer, air flow and duct sizing. Superheat and subcooling adjustments for both refrigeration and air conditioning will be covered.
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 knowledge of the types of commercial refrigeration systems and the integral components.
Identify the common problems with valves, pressure switches, filters and dryers.
Demonstrate the adjustment of the superheat and subcooling of refrigeration and air conditioning machines for maximum efficiency.
Demonstrate understanding of psychrometric charts and its uses in air conditioning.
Measure air flow.
Diagnose common problems associated with air side residential and commercial air conditioning.
Prerequisites: HVA 101 and HVA 200.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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, ratios 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. Emphasis will be placed on real practical applications.
Upon successful completion of this course, students should be able to:
Solve problems using ratios and proportion.
Calculate answers using standard HVAC&R formulas.
Solve triangles using trigonometric ratios and the law of sines and cosines.
Construct airflow charts from raw data and also interpret HVAC&R related graphs.
Prerequisites: MAT 040 or MAT 050. Appropriate placement test scores may be accepted.
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 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 types of pipes and fittings.
Interpret and apply information contained in drawings and blue prints.
Perform accurate measurements.
Demonstrate procedures required for the HVAC&R pipe installation.
Demonstrate the proper procedure for valve installation.
Demonstrate appropriate procedures to test hydraulic and pneumatic pipe deficiencies.
Demonstrate required safety knowledge.
Corequisites: ENG 050 and (ENG 099 or REA 075).
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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 successful 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.
Prerequisites: HVA 100 and HVA 200 and (MAT 110 or MAT 128).
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: HVA 112.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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.
Prerequisites: HVA 108.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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 Lab 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.
Prerequisites: HVA 110 and (MAT 110 or MAT 128).
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

HVA 190 Heating, Ventilation and Air Conditioning Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

HVA 194 Heating, Ventilation and Air Conditioning Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

HVA 199 Heating, Ventilation and Air Conditioning Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

HVA 200 Advanced HVAC&R Electrical Fabrication
This course will introduce students to the electronic operation 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:
Demonstrate understanding of the system operation and sequence of operation for HVAC&R equipment.
Explain control circuits, their use and potential problems.
Troubleshoot refrigeration and air conditioning control systems and isolate the faulty components with the system.
Determine proper replacement procedures when defective or faulty components are found.
Follow safety requirements and regulations.
Prerequisites: HVA 100.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

HVA 201 Refrigerant Certification
This course will instruct the students about the harmful effects of chlorofluorocarbons on the ozone, production limitations and phase-out of CFCs and HCFCs, and recycle, reclaim and recover. The course also prepares students to take EPA national certification exam.
Upon successful completion of this course, students should be able to:
Detail the chemical properties of CFCs and HCFCs.
Demonstrate understanding of the Montreal protocol and the regulations established by the international community concerning refrigerants.
Demonstrate understanding of the US Clean Air Act and the limits and prohibition of CFCs and HCFCs.
Set up record keeping and documentation for refrigerant management program.
Demonstrate understanding of how to recover, recycle and reclaim equipment.
Demonstrate understanding of how to service refrigeration and air conditioning without venting refrigerant into the atmosphere.
Prerequisites: HVA 103.
3 Credits 3 Weekly Lecture Hours

HVA 202 Oil and 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.
Demonstrate the knowledge of the principles of convection of high-efficiency heating equipment.
Demonstrate knowledge of the furnace design and construction.
Identify potential venting problems with high-efficiency equipment.
Demonstrate knowledge of hydronic heating-system components and design.
Service oil and gas burners.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

HVA 203 Heat Pumps
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:
Demonstrate understanding of the operation of a heat pump.
Demonstrate understanding of heat-pump components and control.
Detail the operation of air-source and ground-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.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

HVA 204 Blueprint Reading for HVAC
This course presents fundamentals in the understanding and use of basic HVAC drawings and schematics to determine construction drawings to determine methods and materials of light construction. Emphasis is placed on architectural symbols, use of scales and orthographic projection.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of residential and light commercial construction practices.
Demonstrate competencies in reading and intepreting technical drawings.
Identify appropriate types of reference sources and use them effectively.
Corequisites: HVA 104.
3 Credits

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.
Prerequisites: HVA 106 and TME 115.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

IMM - Interactive Multimedia

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.
Prerequisites: DPR 100 or DPR 101 or DPR 108.
3 Credits 3 Weekly Lecture Hours

IMM 120 Web Page Design and Development
This course introduces students to publishing on the World Wide Web (WWW) using HTML, Cascading Style Sheet (CSS), and Adobe Dreamweaver. Students gain hands-on experience in creating web pages that include text, images, sound, video, animation and basic JavaScript. The history of the Internet and WWW along with accessibility, universal design, responsive design, and careers in web development are also researched and explored.
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 website.
Use HTML elements to create web pages that include links, lists, multimedia, forms and tables.
Demonstrate the ability to manipulate images for inclusion in web pages.
Use basic JavaScript to add interactivity to web pages.
Use CSS to format and layout web pages.
Design websites to provide accessibility.
Design websites that apply universal design concepts.
Research and explore careers and education in web development.
Generate design and development documents for a website.
Demonstrate a working knowledge of standard HTML, and CSS to create web pages.
Demonstrate a working knowledge of responsive web design.
Use Adobe Dreamweaver to design and develop web pages.
Upload files to a web server and maintain websites on a web server.
Prerequisites: DPR 100 or DPR 101 or DPR 108.
3 Credits 3 Weekly Lecture Hours

IMM 200 UX Design
User experience (UX) design is a discipline concerned with all the elements that together make up the user interface, including layout, visual design, text, brand, sound and interaction. (Source: User Experience Professionals Association). This course introduces multi-device design strategies for navigation, screen layout, and interactive content. Learn how to apply interaction design principles to your apps and web sites to create experiences that are engaging, accessible and usable. Follow a user-centered design process for analyzing, planning, and designing user experiences. Map user needs to your proposed UX design solution with scenarios, storyboards and prototypes. Gain insight on how to incorporate accessibility into your design process to increase accessibility to all people, including those with disabilities.
Upon successful completion of this course, students should be able to:
Identify and apply an interactive design process model.
Design applications employing user-centered design techniques.
Analyze techniques for assuring compliance with accessibility guidelines.
Use rapid-prototyping tools to develop user interfaces that utilize interface design standards.
Apply visual principles such as layout, color, iconography, imagery and typography to maximize the UX experience.
Identify career paths, academic programs and training opportunities in the field of User Experience Design.
Prerequisites: IMM 110 and IMM 120.
3 Credits 3 Weekly Lecture Hours

IMM 201 Audio and 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 copyright and multimedia 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.
Prerequisites: DPR 100 or DPR 101 or DPR 108.
3 Credits 3 Weekly Lecture Hours

INT - Interdisciplinary

INT 100 Student Success
Student Success is designed to assist students in their transition to college level work by learning proven strategies for creating greater academic, professional and social success. This course is designed to help students identify and understand the fundamental characteristics and learning strategies needed for college and beyond. Students will be provided with the necessary tools to take personal responsibility for their success while encouraging student interest in promoting self-awareness, increasing their self-concept, and improving their personal and academic success. This course will encourage students to participate in a community of learners, to strengthen their own critical thinking skills, and to communicate more effectively both orally and in writing.
Upon successful completion of this course, students should be able to:
Access and use different technology components utilized by the college.
Define, illustrate, create and implement short and long term personal and academic goals.
Understand and demonstrate campus and classroom protocol.
Examine and demonstrate critical thinking techniques.
Discover, Identify and Utilize individual learning styles.
Learn to Create Greater Inner Motivation.
Appreciate Diversity and Raise cultural Awareness.
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, which can assist in solving a variety of academic as well as personal problems.
Implement an effective management style to improve organization, coordination and use of time.
Explore and utilize processes, which enhance getting along with faculty, students, and others.
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Prerequisites: REA 030 or ESL 045. Appropriate placement test scores may be accepted.
3 Credits 3 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, ie, 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
Corequisites: MTT 108 and TME 115.
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 gera drives and their applications.
Perform calculations involving ratios, shaft speed, and torque for a gear train drive system.
Describe the function of chain drive components within 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 lockout and tag out procedures for varied pieces of industrial process control equipment.
Install and align a conventional v-belt drive system, a multi-belt drive system and describe the methods for measuring belt tension.
Remove and install a chain sprocket and set chain sag for a given application.
Demonstrate the installation and alignment of a single, and a multiple chain drive system.
List various coupling design categories, and demonstrate coupling alignment using rim, face indicator methods.
Specify, install, operate, troubleshoot and maintain a flat belt conveyor system.
Start-up and operate a manually controlled processing system, an open loop control system, and a closed loop control system.
Troubleshoot belt drive, chain, and coupling systems.
Prerequisites: IST 100.
Corequisites: IST 105 and TME 115.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

IST 105 Industrial Systems Interpretations
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.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

IST 190 Industrial Systems Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

IST 194 Industrial Systems Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

IST 199 Industrial Systems Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
3 Credits

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 gauges.
Install a centrifugal pump using manufacturer's specifications.
Identify, specify, and replace packing and mechanical seals.
Start-up, inspect, maintain and troubleshoot a pump.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 110 or MAT 128) and (PHY 100 or PHY 107) and TME 115. Appropriate placement test scores may be accepted.
Corequisites: HVA 206 and IST 105.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Alternate Pre-Req - 2 years of HS Italian
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.
Prerequisites: ITA 101.
3 Credits 3 Weekly Lecture Hours

MAT - Mathematics

MAT 025 Arithmetic Review
This course is designed for students who wish to strengthen their basic arithmetic skills Arithmetic topics include addition, subtraction, and multiplication facts, addition and subtraction of whole numbers, and multiplication and division of whole numbers. Students will strengthen their skills during their required class sessions using interactive computer software combined with personalized, on-demand assistance.
Upon successful completion of this course, students should be able to:
Add and subtract single digit whole numbers.
Multiply and divide single digit whole numbers.
Add and subtract whole numbers.
Multiply and divide whole numbers.
Prerequisites: ESL 043 and ESL 044 and ESL 045 and ESL 046. Appropriate placement test scores may be accepted.
0 Credits

MAT 050 Mathematics Review
This course is designed for students who wish to strengthen their arithmetic skills and introductory algebra skills. Arithmetic topics include fractions, mixed numbers, decimals, ratio and proportion, percent, and real numbers. Introductory algebra topics include linear equations, linear inequalities, graphing linear equations, and polynomials.
Upon successful completion of this course, students should be able to:
Reduce, add, subtract, multiply, and divide fractions.
Write in words or numerals, add, subtract, multiply, divide and round decimals.
Convert fractions, decimals, and percents.
Solve problems using ratios, proportions, and percents.
Evaluate, translate, and simplify algebraic expressions and use properties to add, subtract, multiply, and divide real numbers.
Solve linear equations and inequalities in one variable.
Graph linear equations in two variables.
Add, subtract, multiply, and divide polynomials.
Prerequisites: MAT 025. Appropriate placement test scores may be accepted.
3 Credits 3 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 problems solving techniques, deductive and inductive reasoning, logical reasoning and symbolic logic to solve problems in a variety of disciplines. It also gives students an overview of the history of the number systems of various cultures, and reviews and reinforces the use of Algebra to solve problems in different fields of study OR uses ratios, proportions and percents to solve consumer-related problems.
Upon successful completion of this course, students should be able to:
Use the notation and operations of set theory.
Use inductive and deductive reasoning and symbolic logic as appropriate to draw a logical conclusion from given information.
Represent numbers from different number systems and add, subtract, multiply and divide in numeration systems other than base ten.
Plus, two of the following three competencies: Analyze the real-number system and apply it to real world problems.
Solve linear equations and inequalities using algebraic and graphic techniques, and apply those techniques to real world problems.
Use ratios, proportions, and percents to solve consumer-related problems.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
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 (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. It also serves as a prerequisite for MAT 210.
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.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

MAT 125 Mathematics for Teachers of Children 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 proportion. This course is designed primarily for students pursuing Early Childhood Education (Pre-K-4th grade) or Middle grades (4-8th grade) teacher certification, but may be elected by other education majors.
Upon successful completion of this course, students should be able to:
Utilize the key mathematical processes of communicating, reasoning, solving problems and making connections with mathematics and real world problems, and making connections among the various mathematical systems: whole numbers, integers, and rational numbers (fractions).
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 structure, properties and operations in the system of integers.
Demonstrate an understanding of properties and operations with fractions.
Solve problems using ratios, proportions and percents.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

MAT 126 Mathematics for Teachers of Children II
As a continuation of Mathematics for Teachers I, this course is designed primarily for students pursuing Early Childhood Education (Pre-K - 4th grade) or Middle grades (4-8th grade) teacher certification, but may be elected by other education majors. The 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.
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.
Prerequisites: MAT 125.
3 Credits 3 Weekly Lecture Hours

MAT 128 Algebra
This course is designed primarily as a preparatory course for students intending to take 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 and inequalities.
Solve problems involving functions and their graphs.
Solve problems involving linear systems.
Perform basic operations on polynomials and factor polynomials.
Simplify and perform basic operations on rational expressions and solve rational equations.
Simplify and perform basic operations on radical expressions and solve radical equations.
Solve quadratic equations.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
4 Credits 4 Weekly Lecture Hours

MAT 135 Business Precalculus
This course is designed primarily (but not exclusively) for Business Majors. Topics include graphing and solving problems using linear, quadratic, rational, square root, log, and exponential functions, solving systems of equations, performing operations on matrices, linear programming, and applications from business and economics.
Upon successful completion of this course, students should be able to:
Graph and solve problems using linear, quadratic, polynomial, rational, and square root functions.
Graph and solve problems involving the log and exponential functions.
Perform operations on matrices.
Find the optimal solution of a linear programming problem using the graphing method of two variables.
Apply the mathematical properties of lines, matrices, and exponential and log functions to business and economic problems.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 100 or MAT 128. Appropriate placement test scores may be accepted.
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.
Prerequisites: 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). NOTE: Pre-requisite requires a grade of 'C' or higher.
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.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 100 or MAT 128. Appropriate placement test scores may be accepted.
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. NOTE: Pre-requisite requires a grade of 'C' or higher.
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.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 151 or MAT 140. Appropriate placement test scores may be accepted.
4 Credits 4 Weekly Lecture Hours

MAT 160 Calculus I
This course is designed for students in the fields of science and engineering. It includes the concept of limit, the rate of change of a function, derivatives, limits of sums, integrals, and applications of differentiation. 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 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.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 152 or MAT 150 or MAT 141. Appropriate placement test scores may be accepted.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

MAT 161 Calculus II
This course is a continuation of Calculus I, MAT 160, and is designed for students in the fields of mathematics, science and engineering. It includes inverse trigonometric functions, applications of integration, methods of integration, improper integrals, conic sections, parametric equations, polar coordinates, and infinite series. Calculus II is an appropriate math selection for students interested in STEM careers and may also be applied to most other majors.
Upon successful completion of this course, students should be able to:
Differentiate and integrate inverse functions.
Use integral calculus to determine area and volume and to solve applied problems.
Integrate functions using different techniques.
Relate functional and geometric properties of conic sections, curves given in parametric form, and polar curves.
Test infinite series for convergence or divergence.
Prerequisites: MAT 160.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

MAT 190 Mathematics and Natural Science Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit 1 Weekly Lecture Hour

MAT 194 Mathematics and Natural Science Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits 2 Weekly Lecture Hours

MAT 199 Mathematics and Natural Science Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits 3 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.
Prerequisites: 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. NOTE: Pre-requisite requires a grade of 'C' or higher.
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.
College Academic Learning Goal Designation: Quantitative Reasoning (QR)
Prerequisites: MAT 121 or MAT 151 or MAT 152 or MAT 160 or MAT 161 or MAT 200 or MAT 230 or MAT 260 or MAT 261.
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. NOTE: Pre-requisite requires a grade of 'C' or higher.
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.
Prerequisites: MAT 161.
3 Credits 3 Weekly Lecture Hours

MAT 260 Calculus III
This course is a continuation of Calculus II, MAT 161, and is designed for students in the fields of mathematics, science and engineering. It includes vectors in two- and three-dimensional space, vector-valued functions, partial differentiation, multiple integration, and vector analysis. Calculus III is an appropriate math selection for students interested in STEM careers and may also be applied to most other majors.
Upon successful completion of this course, students should be able to:
Use vectors to solve 2-space and 3-space geometrical problems.
Use vector-valued functions to describe motion in space.
Find partial derivatives 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.
Prerequisites: MAT 161.
4 Credits 4 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.
Prerequisites: MAT 260.
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 Lab 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 US.
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.
Prerequisites: 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 Lab 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 Lab Hour

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 Lab Hour

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 Lab Hour

MPT 206 Report Writing and 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 Lab Hour

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 Lab Hour

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.
Corequisites: MTT 108 or MAT 110 or MAT 128 or MAT 140 or MAT 150 or MAT 151 or MAT 160.
4 Credits 3 Weekly Lecture Hours
1 Weekly Lab Hour

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 commonalties 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 rudimental 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 machinability 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.
Corequisites: MTT 108 or MTT 110 or MAT 110 or MAT 128 or MAT 140 or MAT 150 or MAT 151 or MAT 160.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Corequisites: MTT 108 and MTT 110 and MTT 111.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: MTT 112.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Corequisites: MTT 108 and MTT 110 and MTT 111.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: MTT 110 and TCC 111.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

MTT 190 Machine Tool Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

MTT 194 Machine Tool Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

MTT 199 Machine Tool Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

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 rudimental 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/downloading 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.
Prerequisites: MTT 122.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.

Prerequisites: MTT 108 and MTT 110.

3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.

Prerequisites: MTT 124.

3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.

Prerequisites: MTT 129.

Corequisites: MTT 210.

3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.

Prerequisites: (MTT 108 or MAT 110 or MAT 128) and MTT 110 and MTT 112 and MTT 122 and MTT 210 and TCC 111.

3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: MTT 219.
Corequisites: MTT 220.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: MTT 220.
Corequisites: MTT 229.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 AD 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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. NOTE: Prerequisites: MUS 125 or permission of instructor.
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.
Prerequisites: MUS 125.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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. NOTE: Recommended (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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

NDT - Neurodiagnostic Technology

NDT 100 Foundations of Neurodiagnostic Technology
This course is designed to prepare the students for working in a healthcare setting as a Neurodiagnostic Technologist. The course focuses on various aspects of Neurodiagnostic Technology (NDT) and other allied health professions. Major components include nervous system and other relevant medical terminology, infection control practices in health care, and patient safety assessments. Students will also be introduced to the historical perspectives of Electroneurodiagnostics, as well as the Scope of practice of a NeurodiagnosticTechnologist and profession ethics as outlined by the Neurodiagnostic Society (ASET). This course will also provide students with the fundamental concepts necessary for performing routine electroencephalograms (EEG). Students will become familiar with the published guidelines for performing routine adult EEG and will learn the basic concepts of recording normal awake and sleep patterns to be applied in NDT 101. NOTE: Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Define the Neurodiagnostic Technology (NDT) profession and describe the role of an Electroencephalography (EEG) technologist.
Describe the accepted scope of practice, statement of professional ethics, and graduate competencies.
Describe the contributions of electronic discoveries and the effects of key individuals on EEG testing procedures.
State the various infection precaution categories and describe the methods of proper infection prevention measures.
Define the terms used for various neurological disorders and diagnostic testing procedures.
Define key terms used for EEG interpretation.
Describe patient rights.
List patient assessment methods and techniques of acquiring vital signs.
Classify allied health professions and relative legislative issues pertaining to current controversies in health care.
Identify local and national EEG and allied health organizations.
Demonstrate basic math skills including calculation of voltage, frequency, duration, and metric measurements.
Discuss the different types of NDT testing procedures performed in the NDT lab.
Identify gross anatomy of the brain including lobes and basic function.
Define EEG and explain how it relates to neural functioning.
Explain the various activation procedures and give the benefits and contraindications for each.
Calculate the voltage, frequency and duration of selected waves.
Discuss calibration, reason for performing calibration and appropriate methods of troubleshooting.
Understand the role of the Allied Health Professional in emergency preparedness; including lab protocols for emergency and disaster situations, and hazardous material handling procedures.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
Corequisites: NDT 101.
3 Credits 3 Weekly Lecture Hours

NDT 101 Neurodiagnostic Technology Practicum I
This course provides ongoing clinical instruction and an evaluation method for students to demonstrate clinical competency for electroencephalography (EEG) procedures. Students learn about various hospital department functions and will be oriented to lab equipment, lab policies and procedures. Students are given instruction on the importance of the utilization and role of Allied Health Professionals in emergency situations, as well as bioterrorism and hazard preparedness. Students complete 10 hours per week of EEG application lab and clinical experience during this course. Students utilize mannequin heads and fellow classmates (seated students) for electrode placement while gaining experience, increasing accuracy and speed prior to clinical practice. This course combines didatic information with clinical experience and psychomotor skills in a real clinical setting. NOTE: Student must pass each Clinical Competency Exam with at least a 70%. Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Apply necessary critical thinking skills to assess and meet patient needs.
Measure head according to the International 10-20 system.
Identify electrode locations according to the international 10-20 system of measurement.
Demonstrate basic math skills necessary to adhere to 10-20 measurement system.
Accurately apply electrodes using various accepted methods of paste and collodion.
Gather and input patient information including pertinent medical history.
Apply the American Clinical Neurophysiology Society (ACNS) guidelines for montage development and routine Electroencephalogram (EEG) recording.
Complete practicum and clinical requirements and provide documentation of clinical performance.
Provide documentation of EEGs performed.
Describe various departmental supplies and equipment as well as policies for patient sedation, maintaining equipment, handling hazardous items such as collodion, acetone, needles and sharps.
Understand electrical safety in the patient care setting.
Recognize basic normal patterns in the awake, drowsy and asleep adult EEG and provide.
documentation of technical interpretation in clinical practice.
Corequisites: NDT 100.
7 Credits 2 Weekly Lecture Hours
10 Weekly Lab Hours

NDT 102 Neuroanatomy and Physiology of the Nervous System
This course is designed to orient students to the anatomy and physiology of the nervous system. The focus of the course will be on the structure and function of the nervous system in relation to the performance of neurodiagnostic technology testing. Students will become familiar with the proper use of neuroanatomical terminology and the level of Neuroanatomy and Neurophysiology necessary to perform NDT testing. In addition, functional impairment resulting from disease or injury of sensory, motor, and cognitive structures of the brain will be introduced. NOTE: Students must achieve a 'C' or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course. BIO 150 grade 'C' or better
Upon successful completion of this course, students should be able to:
Understand and properly use neuroanatomical terminology.
Describe embryological development of the nervous system.
List the structures and functions of various neural cells in relationship to impulse propagation.
Describe EEG generation.
Identify the four lobes of the brain and the neuroanatomical landmarks that define their boundaries.
Discuss the localization and clinical significance of eloquent cortex in each of the four lobes of the human brain.
Sketch and label the major arteries supplying blood to the brain and spinal cord.
Describe the organization of gray matter and white matter.
Identify the ventricles of the brain and discuss the function of cerebrospinal fluid.
Describe the organization of the major ascending and descending tracts of the brain and spinal cord, including neural systems for pain and temperature sensation, touch and pressure sensation, motor control, and vision.
Describe the location and function of the major neuroanatomical structures involved in motor and sensory processing.
Identify the 31 pairs of spinal nerves and understand a reflex arc pathway.
Discuss the relationship between the blood brain barrier and pharmacology.
Identify the cranial nerves by name and number and list the major functions associated with each.
Discuss the functional impairments resulting from injury or disease associated with major sensory and motor structures in the forebrain, hindbrain and spinal cord.
Discuss the functional impairments resulting from injury or disease associated with major cognitive systems in the forebrain and hindbrain.
Prerequisites: NDT 100 and NDT 101 and BIO 150.
Corequisites: NDT 103.
3 Credits 3 Weekly Lecture Hours

NDT 103 Neurodiagnostic Technology Principles and Practicum II
Neurodiagnostic Technology Principles and Practicum II expands on the basic concepts learned in electroencephalogram (EEG) technology and Practicum I and will introduce the advanced concepts of EEG technology. This course also covers the basic concepts of instrumentation including hardware, polarity, localization and filters. Students will learn The American Clinical Neurophysiology Society (ACNS) Guidelines for more complex EEG recordings, such as cerebral brain death studies and pediatric recording requirements. Students will also be trained to recognize more complex EEG patterns such as the maturing EEG of a neonate, abnormal patterns associated with multiple neurologic conditions and patterns of unknown significance. NOTE: Student must pass each Clinical Competency Exam with at least a 70%. Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Identify normal, abnormal and benign electroencephalogram (EEG) patterns.
Differentiate between physiologic electrographic EEG and artifact.
Explain the affects of filters on specific waveforms.
Describe EEG activity using appropriate terminology.
Identify specific artifacts and method of elimination.
Apply polarity rules in order to identify EEG patterns.
List the advantages and disadvantages of each type of electrode and method of application.
Complete clinical requirements and document (12 hours/week).
Provide documentation of EEGs performed.
Provide documentation of pattern recognition and technical interpretation.
Explain the technical and ethical concepts of brain death, Electrocerebral Inactivity (ECI), recordings.
Discuss in detail The American Clinical Neurophysiology Society (ACNS) Guidelines for recording pediatric EEG studies and how they relate to the everyday clinical setting.
List common antiepileptic medications, their uses, side effects, and effects on the EEG tracing.
Explain sedation practices and the advantages and disadvantages associated with conscious sedation.
Prerequisites: NDT 100 and NDT 101.
Corequisites: NDT 102.
8 Credits 3 Weekly Lecture Hours
10 Weekly Lab Hours

NDT 104 Neurodiagnostic Technology Practicum III
This course is designed to prepare students for the duties involved in performing Evoked Potential (EP) testing procedures and will introduce students to the basic clinical and technical concepts of visual, auditory and somatosensory evoked potentials. This course also provides instruction for basic computer components and their performance, digital recordings, vertical and horizontal resolution, Nyquist theory, aliasing, sampling rate, sampling skew, display gain, epoch/paperspeed, montage reformatting, networking, data transfer, archiving and video linking and recording references. NOTE: Students will attend both lecture and lab. Students must pass each Clinical Competency Exam with at least a 70%. Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Understand basic computer components and their performance as they relate to neurodiagnostic testing procedures.
This includes digital recordings, vertical and horizontal resolution, aliasing, sampling skew and waveform display settings.
Describe the basic computer components of a digital Evoked Potential (EP) machine.
Define digital related terms such as: analog to digital conversion, horizontal and vertical resolution and aliasing.
Define evoked potentials and explain how they are used to evaluate neural functioning.
Describe the accepted use of parameter settings and appropriate instrumentation for auditory, visual and somatosensory evoked potentials.
State the electrode measurement and application techniques for auditory visual and somatosensory evoked potentials.
Describe the anatomy of the auditory, visual, and sensory pathways.
Identify the waveform responses and generator sites.
State the criteria for clinically significant abnormality.
Define key terms used for evoked potential interpretation.
Prerequisites: NDT 102 and NDT 103.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

NDT 105 Neurodiagnostic Technology Practicum IV
This course is designed to prepare students for the duties involved in performing Polysomnography (PSG) testing procedures. This course will introduce students to the basic clinical and technical concepts of all night sleep studies, multiple sleep latency tests and maintenance of wakefulness tests. This course also provides basic introductory instruction on normal sleep architecture and the procedures involved in the PSG electrode application/hook-up and recording. NOTE: Student must pass each Clinical Competency Exam with at least a 70%. Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Describe the montages used in polysomnography (PSG) .
Demonstrate how to perform a technically adequate Polysomnography , multiple sleep latency test (MSLT) and maintenance of wakefulness test (MWT) by measuring and applying electrodes according to protocol.
Perform a patient calibration.
Perform an instrument calibration.
Demonstrate how to obtain a baseline recording.
Describe common sleep disorders and treatment options.
Prerequisites: NDT 104.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

NDT 200 Neurological Disorders
This course provides detailed information about the neurological examination and specific neurological diseases processes relevant to the field of Neurodiagnostics. Students will gain knowledge of specific neurological disease processes such as: epilepsy and seizures, epileptic syndromes, cerebrovascular diseases, dementia, syncope, coma, congenital and developmental disorders, CNS infections, psychiatric and psychological disorders, movement disorders and headache. Several sessions will focus on related anatomy and pathology to correlate clinical findings and Neurodiagnostic test results. NOTE: Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Understand the key components of the neurological exam and how these findings are relevant to electroencephalogram (EEG) findings.
Define the various levels of consciousness and clinical signs associated with impaired consciousness and coma.
Understand the anatomic structures required to maintain consciousness.
Explain the basic terms used to describe seizures and the difference between seizures and epilepsy.
Describe specific types of seizures, their clinical signs, EEG, treatment options and classification.
Differentiate between ischemic and hemorrhagic stroke; identify possible clinical symptoms by location of event, and identify the major blood vessels supplying the brain and the regions of the brain they affect.
Identify symptoms associated with the various dementia and delirium and the EEG findings associated with dementia and delirium.
List the symptoms associated with Central Nervous System (CNS) infections.
Understand psychiatric and psychological disorders in the field of Neurodiagnostic Technology.
Understand the basics of brain imaging techniques and how they relate to neurodiagnostic findings.
Describe the most common movement disorders and their treatment.
Define the different types of headaches and their treatment.
Understand the terms used to refer to different types of nerve injury and distinguish the difference between axonal and demyelinating neuropathies.
Determine the different effects that an axonal and a demyelinating neuropathy will have on nerve conduction studies.
Describe the different types of muscle disease and how the Electromyography (EMG) can be used to diagnose them.
Recognize the different types of autonomic disorders and the tests used to diagnose them.
Identify the different symptoms associated with imbalance and the diagnostic approach to dizziness.
Discuss the possible causes, diagnosis, and treatment of multiple sclerosis.
Explain the basic principles behind using ultrasound to image vessels and the basic principles behind transcranial Doppler.
Understand the neuroanatomy of pain and the treatments for pain.
Describe the most frequent syndromes associated with spinal cord injury.
Prerequisites: NDT 105.
Corequisites: NDT 201.
3 Credits 3 Weekly Lecture Hours

NDT 201 Neurodiagnostic Technology Practicum V
This course provides ongoing clinical instruction and an evaluation method for students to demonstrate clinical competency for Electroencephalography (EEG) procedures, as well as apply skills learned in NDT 104 (Evoked Potentials) and NDT 105 (Polysomnography PSG) to the clinical environment. Students will learn about seizure classification and epileptic syndromes. This course will also focus on EEG interpretation as associated with seizure disorders, epileptiform abnormalities, and artifact recognition. NOTE: Student must pass each Clinical Competency Exam with at least a 70%. Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Apply necessary critical thinking skills to assess and meet the patient's needs.
Measure head according to the International 10-20 System.
Accurately apply electrodes using various accepted methods of paste and collodion.
Complete clinical requirements and document.
Provide documentation of Neurodiagnostic Technology (NDT) studies performed.
Provide documentation of pattern recognition and technical interpretation.
Understand the importance of artifact recognition, elimination, and monitoring techniques.
Discuss seizure classification and provide examples of seizure disorders related to each category.
Discuss in detail a patient's history, course, treatment, and outcome as it relates to a specific epileptic syndrome and present these findings in a case history/research project.
Prerequisites: NDT 105.
Corequisites: NDT 200.
8 Credits 3 Weekly Lecture Hours
10 Weekly Lab Hours

NDT 202 Neurodiagnostic Technology Practicum VI
This course provides ongoing clinical instruction and an evaluation method for students to demonstrate clinical competency for electroencephalogram (EEG) procedures and advanced monitoring. During this semester the students will apply critical thinking skills in order to distinguish the monitoring techniques in the operating room and long term monitoring environment. During clinical rotations the students will generate a hypothesis based on the evidence of the data of the history and technologist's assessment of the patient. This course introduces the students to advanced monitoring techniques performed in the Epilepsy monitoring unit, Neonatal and Adult Intensive Care Units, as well as multiple procedures performed in the operating room. NOTE: Student must pass each Clinical Competency Exam with at least a 70%. Students must achieve a "C" or better in each NDT course within the Neurodiagnostic Technology Program in order to progress sequentially to the next course.
Upon successful completion of this course, students should be able to:
Apply necessary critical thinking skills to assess and meet the patient's needs.
Measure head according to the International 10-20 System.
Accurately apply electrodes using various accepted methods of paste and collodion.
Complete clinical requirements and document.
Provide documentation of Neurodiagnostic Technology (NDT) studies performed.
Provide documentation of pattern recognition and technical interpretation.
Understand the importance of artifact recognition, elimination, and monitoring techniques.
Discuss seizure classification and provide examples of seizure disorders related to each category.
Discuss in detail a patient's history, course, treatment, and outcome as it relates to a specific epileptic syndrome and present these findings in a case history/research project.
Prerequisites: NDT 201.
8 Credits 2 Weekly Lecture Hours
12 Weekly Lab 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, students should be able to:
Describe and implement various network services and standards as related to the Open Systems Interconnection (OSI) model.
Demonstrate the ability to properly troubleshoot network connectivity problems.
Establish network security and various management practices.
Describe and install network connectivity devices and transmission media.
Define the topologies and how they work with each other.
Perform basic TCP/IP computations and perform troubleshooting utilizing various TCP/IP command line utilities.
Describe and implement common network protocols.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

NET 115 Microsoft Windows 10
This course is designed to introduce students to setup and manage the current field accepted and supported Microsoft Windows client operating system, Windows 10. Students will gain experience in installing, configuring, and troubleshooting this enterprise level workstation operating system along with gaining the knowledge and foundation related to Microsoft's current vendor certification exams for this operating system.
Upon successful completion of this course, students should be able to:
Understand the current Windows operating system features and requirements.
Perform installations and upgrades of current Windows client operating systems.
Configure and manage virtual hard disks.
Configure IP addresses and network settings.
Configure and manage NTFS permissions to shares, folders, and files.
Configure and monitor Windows system performance.
Configure User Account Controls and Local Policies.
Configure Windows Firewall.
Configure Windows backup and recovery options.
Configure Windows mobility and remote access controls.
Corequisites: NET 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

NET 116 Microsoft Server 2016: Installation and Storage
This course is designed to introduce students to setup and support the Microsoft Windows Server 2016 operating system. Students will gain hands-on experience in installing, administering, and configuring this enterprise level server operating system. Additionally, students will gain hands-on experience in IP address configuration, creating and managing volumes, creating virtual hard disks, installing and managing Active Directory, implementing group policies, configuring DNS zones, configuring NTFS permissions, creating and sharing printers, installing and configuring the DHCP server role, and installing virtual microsoft servers. This course is also designed to help prepare students for the current, related, Microsoft Server 2016 Certification Exam.
Upon successful completion of this course, students should be able to:
Plan and install the most recent Microsoft Windows Server operating system.
Install and configure the DHCP and DNS server roles.
Install and configure Active Directory.
Create and manage server volumes and virtual hard disks.
Configure server IP addresses.
Plan and implement NTFS file and printer permissions.
Create and share printers.
Plan and implement Group Policies.
Configure DNS zones.
Install Microsoft Windows Server virtual machines.
Corequisites: NET 115.
4 Credits 4 Weekly Lecture Hours

NET 117 Microsoft Server: Networking
This course is designed for students who plan to support Microsoft Server 2016 and its various domain environment and networking services. Students will learn how to manage and configure DNS and TCP/IP on a Microsoft Server, how to install and configure a DHCP server, how to install and configure the Routing and Remote Access policies and Network Access policies in a Microsoft Server environment, as well as configuring NIC teaming. This course is designed to help students prepare for the current, related, directly maps towards and is a first step in helping students prepare for the Microsoft Server 2016 Networking 70-741 certification exam.
Upon successful completion of this course, students should be able to:
Manage and Configure DNS on a Microsoft Server.
Manage and Configure TCP/IP settings and addresses.
Install and Configure a Microsoft DHCP Server.
Install and Configure Routing and Remote Access on a Microsoft Server.
Implement and Manage Network Access Policies on a Microsoft Server.
Configure NIC Teaming on a Microsoft Server.
Corequisites: NET 116.
4 Credits 4 Weekly Lecture Hours

NET 142 Cyber and 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, students 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 malware.
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.
Prerequisites: NET 110.
4 Credits 4 Weekly Lecture Hours

NET 210 CCNA 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.
Prerequisites: 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.
Prerequisites: NET 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

NET 231 Network Systems Administration
This course is designed for students who plan to support Microsoft Server 2016 and its various Identity related services. Students will learn how to install and manage Microsoft Active Directory, Group Policy, Active Directory Certificate Services, Active Directory Federation Services, and Active Directory Rights Management Services. This course directly maps towards and is a first step in helping students prepare for the Microsoft Server 2016 Identity certification exam. .
Upon successful completion of this course, students should be able to:
Plan, implement, and manage Active Directory container and leaf objects.
Configure and implement Microsoft's Group Policy.
Install and configure Active Directory Certificate Services.
Install and configure Active Directory Federation Services.
Install and configure Active Directory Rights Management Services.
Prerequisites: NET 115.
4 Credits 4 Weekly Lecture Hours

NET 232 Network Design and 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.
Prerequisites: NET 231.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: MAT 050 or MAT 060. Appropriate placement test scores may be accepted.
1 Credit 1 Weekly Lecture Hour

NUS 110 Concepts and Practice I

NUS 110, Concepts and Practice I, is the first nursing course in the sequence of four semesters. The concept based model of nursing practice is presented within the context of professional role behaviors, patient attributes and the health and illness continuum. Knowledge and skills basic to the practice of nursing presented utilizing student-centered learning activities. Clinical and simulation laboratory experiences support the acquisition of knowledge and skills fundamentals to the practice of nursing. NOTE: Prerequisites: BIO 150 and BIO 151* with grades of "C" or better, ENG 100, MAT 121, NUS 102, PSY 140. *Courses marked with a star may be taken concurrently. TEAS scores that are consistent with those for entrance to the nursing program. NOTE: Non-Academic Prerequisites: Complete physical examination, laboratory tests, urine drug screen, two-step PPD, current immunizations including Hepatitis B vaccine, current CPR certification (Healthcare Provider), criminal background check and child abuse clearance, and professional liability and health insurance.

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

Identify the professional roles of the nurse as member of the health care team.

Use the nursing process in the practice of safe, effective, patient-centered care to maintain optimal health.

Identify current best evidence for the provision of quality patient care.

Apply therapeutic communication principles to enhance the professional relationship between nurse and patient.

Identify health care infrastructures and community resources available to coordinate appropriate planning of care for all patients.

Describe concepts of nursing practice across the health and illness continuum.

Prerequisites: BIO 150 and ENG 100 and MAT 121 and NUS 102 and PSY 140. Corequisites: BIO 151.

8 Credits 4 Weekly Lecture Hours
8 Weekly Lab Hours

NUS 111 Concepts and Practice II

NUS 111, Concepts and Practice II, is the second nursing course in a sequence of four semesters. In this course, concepts are explored within the context of health and illness experiences and build on the knowledge acquired in NUS 110. These experiences reflect diverse patient populations and family health nursing. Clinical and simulation laboratory experiences support the acquisition of knowledge and skills in adult and family health nursing. NOTE: Prerequisites: NUS 110 or NUS 214 with grade of "C" or better and BIO 151 with grade of "C" or better.

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

Use principles of safe effective, patient centered care, using best evidence, for an individual with alterations in stress, adaptation, cognition related to anxiety and dementia.

Use principles of safe effective, patient centered care, using best evidence, for an individual with alteration in the concept of oxygenation related to an infectious process.

Use principles of safe effective, patient centered care, using best evidence, for an individual with an alteration in the concept of perfusion as a result of altered hemostasis and peripheral vascular resistance.

Use principles of safe effective, patient centered care, using best evidence, for an individual with an alteration in the concept of nutrition, metabolism related to endocrine dysregulation.

Use principles of safe effective, patient centered care, using best evidence, for an individual with an alteration in the concept of elimination, digestion related to an inflammatory or erosive process.

Use principles of safe effective, patient centered care, using best evidence, for an individual with an alteration in concept of urinary elimination related to an obstructive or infectious process.

Use principles of safe effective, patient centered care, using best evidence, for an individual with an alteration in the concept of mobility related to bone or joint dysfunction.

Use principles of safe effective, patient centered care, using best evidence, related to the concept of family health and reproduction.

Prerequisites: (NUS 110 or NUS 214) and BIO 151.

10 Credits 4 Weekly Lecture Hours
12 Weekly Lab 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.
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. 6 weekly clinical hours
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.
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.
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. NOTE: The following must be submitted prior to registering for the Internship: A letter from the department manager validating the nurse's experience (in years), proficiency in scrub and circulator roles, ability to perform in stressful and emergency situations, and ability to perform effectively and harmoniously as a team member. A copy of the display portion of the professional license to practice nursing in the state in which the internship is to be done. Evidence of current professional malpractice insurance (policy and cancelled check) Completed health examination (form supplied by the College) Evidence of current health insurance policy. Evidence of current CPR certification (ACLS) Copy of certification card (CNOR) 6 weekly clinical hours
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.
Prerequisites: NUS 207.
3 Credits 3 Weekly Lecture Hours

NUS 210 Concepts and Practice III
NUS 210, Concepts and Practice II, is the third nursing course in a sequence of four semesters. In this course, curricular concepts are explained within the context of increasingly complex acute and chronic health needs. The inter-professional model is used to discuss care of diverse patient populations. Clinical and simulation laboratory experiences support the acquisition of knowledge and skills in the care of children and adults with acute, complex needs. NOTE: Prerequisites: NUS 111 and NUS 221 with grades of “C” or better.
Upon successful completion of this course, students should be able to:
Apply knowledge of the concept of stress, adaptation, cognition to provide safe, effective, patient centered care incorporating best evidence for an individual experiencing thought process, mood, developmental, or addictive disorders.
Apply knowledge of the concept of oxygenation to provide safe, effective, patient centered care incorporating best evidence for an individual experiencing an obstructive pulmonary process.
Apply knowledge of the concept of perfusion to provide safe, effective, patient centered care incorporating best evidence for an individual affected by an atherosclerotic process.
Apply knowledge of the concept of metabolism to provide safe, effective, patient centered care incorporating best evidence for an individual experiencing an inflammatory process.
Apply knowledge of the concept of fluid and electrolytes to provide safe, effective, patient centered care incorporating best evidence for an individual experiencing a renal dysfunction.
Apply knowledge of the concept of cellular regulation, immunity to provide safe, effective patient centered care incorporating best evidence.
Prerequisites: NUS 111 and NUS 221.
10 Credits 4 Weekly Lecture Hours
12 Weekly Lab Hours

NUS 211 Concepts and Practice IV
NUS 211, Concepts and Practice IV is the fourth nursing course in a sequence of four semesters. In this course, curricular concepts are explored and integrated with knowledge gained throughout the nursing program. Community concerns among diverse populations are addressed. Professional role behaviors of management and leadership are presented, building upon previously learned professional roles and responsibilities. Clinical and simulation laboratory experiences support the acquisition of knowledge and leadership skills in the care of adults with complex care needs in acute, sub-acute, and community settings. NOTE: Prerequisites: NUS 110 with grade of "C" or better.
Upon successful completion of this course, students should be able to:
Integrate skills for leadership and professional growth within the role of the professional nurse.
Integrate knowledge of the concept of cognition with principles of safe, effective, patient-centered care, using current best evidence in a patient experiencing alterations in intracranial regulations.
Integrate knowledge of the concept of oxygeneration with principles of safe, effective, patient-centered care, using current best evidence in a patient experiencing overwhelming respiratory failure.
Integrate knowledge of the concept of perfusion with principles of safe, effective, patient-centered care, using current best evidence in a patient experiencing electrical instability and inadequate tissue perfusion to vital signs.
Integrate knowledge of the concept of mobility with principles of safe, effective, patient-centered care using current best evidence in a patient experiencing alterations in neurologic function.
Integrate knowledge of the concept of safety and security with principles of safe, effective, patient-centered care, using current best evidence for community concerns.
Prerequisites: NUS 210.
10 Credits 4 Weekly Lecture Hours
12 Weekly Lab Hours

NUS 214 LPN to RN Education Bridge
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. This course will compare and contrast the roles of the LPN and RN, assist the students in identifying evidence based practices, develop critical thinking skills, test taking skills and applying these skills to patient assessment both in the community and other care settings along the health/wellness continuum. NOTE: Prerequisites: BIO 150 and BIO 151* with grades of "C" or better, ENG 100, MAT 121, NUS 102, PSY 140. *Courses marked with a star may be taken concurrently. TEAS scores that are consistent with those for entrance to the nursing program.
Upon successful completion of this course, students should be able to:
Identify the professional roles of the registered nurse as member of the health care team, comparing and contrasting the role of the LPN to the role of the RN.
Identify current best evidence for the provision of quality patient care.
Develop critical thinking and test taking skills related to patient assessment.
Identify health care infrastructures and community resources available to coordinate appropriate planning of care for all patients.
Prerequisites: BIO 150 and ENG 100 and MAT 121 and NUS 102 and PSY 140.
Corequisites: BIO 151.
2 Credits 2 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. NOTE: Prerequisites: NUS 110 with grade of "C" or better for Nursing students. No prerequisites or corequisites for graduate nurses, LPN's, Paramedics, or RN's.
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.
Prerequisites: NUS 111.
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. NOTE: Prerequisites: NUS 110 and BIO 151 with grades of "C" or better.
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.
Prerequisites: NUS 110 and BIO 150.
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. NOTE: Prerequisites/Co-requisites: 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 pre-requisites.
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.
Prerequisites: NUS 111.
3 Credits 3 Weekly Lecture 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:
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 Technology

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.
Corequisites: PCT 101.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
4 Credits 2 Weekly Lecture Hours
4 Weekly Lab 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.
Corequisites: PCT 100 and 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.

Prerequisites: PCT 100 and PCT 101 and (MAT 110 or MAT 128 or MAT 140 or MAT 150 or MAT 151 or MAT 160).

Corequisites: PHY 100 or PHY 107 or PHY 110 or PHY 131.

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.

Prerequisites: PCT 100 and (MAT 111 or MAT 120 or MAT 135 or MAT 151) and IST 105.

Corequisites: IST 200 and (PHY 100 or PHY 107).

3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: PCT 111 and (CHE 106 or CHE 101).
Corequisites: PHY 101 or PHY 107.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 commonalties, 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.
Prerequisites: (MAT 111 or MAT 120 or MAT 135 or MAT 141 or MAT 150 or MAT 151 or MAT 152 or MAT 161) and (CHE 106 or CHE 101).
Corequisites: (PHY 101 or PHY 107) and PCT 115.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

PCT 190 Process Control Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

PCT 194 Process Control Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

PCT 199 Process Control Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

PHI - Philosophy

PHI 100 Introduction to Philosophy
This course is an introduction to philosophical questions as treated by thinkers from a worldwide range of philosophical traditions. The course will explore issues drawn from at least three traditional areas of philosophical investigation. These areas of philosophy include the following: logic (reasoning and argumentation), ethics (moral theory and its applications), metaphysics (the study of the basic properties of reality), epistemology (the theory of knowledge), philosophy of religion (arguments for the existence of God, etc.) aesthetics (the theory of beauty and its manifestation in art and nature) and political philosophy (the study of principles of governing human society). In each case, philosophical problems will be discussed through the an encounter with both Western and Non-Western thinkers and schools of thought. NOTE: Prerequisites: ENG 100 with grade of "C" or better.
Upon successful completion of this course, students should be able to:
Identify the basic elements of sound reasoning and make a cogent argument for philosophical position.
Recognize and explain the basic issues involved with significant philosophical problems as presented in the course.
Identify and demonstrate an understanding of the major philosophical ideas or theories that address the philosophical problems presented in the course.
Critically appraise the arguments of philosophers by offering an account of their strengths and/or weaknesses.
Compare and contrast the works of two philosophers from different world traditions on a specific philosophical topic.
College Academic Learning Goal Designation: Critical Reasoning (CR), Global Understanding (GU)
Prerequisites: 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. NOTE: Prerequisites: ENG 100 with grade of "C" or better.
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.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

PHY - Physics

PHY 107 Technical Physics
Technical Physics is an algebra-based course designed primarily for students in the technologies. The course explores selected topics related to mechanics, sound, electricity, and magnetism, with an emphasis on technical applications of physics.
Upon successful completion of this course, students should be able to:
Identify 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, time, velocity, and acceleration.
Analyze motion using Newton's Laws in one and two dimensions.
Apply the Laws of Conversation of Momentum and Energy.
Apply mechanics to rotating systems.
Describe the nature of wave motion and apply it to sound waves.
Analyze electrostatic forces and related electrical concepts.
Explain the fundamentals of magnetism.
Apply the topics listed above to understand the functioning of simple machines and electrical devices.
Apply laboratory skills and technologies to solve problems in a cooperative environment.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: MAT 110 or MAT 128.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

PHY 110 College Physics I
This is a course designed for science majors who are not in the calculus sequence. The course content consists of 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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: ((MAT 151 or MAT 140) and (MAT 152 or MAT 141*)) or MAT 150. *Courses marked with a star may be taken concurrently.*
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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, students 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.
Prerequisites: PHY 110 and (MAT 152 or MAT 141 or MAT 150).
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
College Academic Learning Goal Designation: Scientific Reasoning (SI)
Prerequisites: MAT 160.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: PHY 131.
Corequisites: MAT 161.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: 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. NOTE: Prerequisites: Must take College Placement Exam and must be employed by a Master Plumber.
Upon successful completion of this course, students should be able to:
Explain the history of plumbingExplain the development of plumbing codesDefine terminology associated with the trade, for example; fitting allowances Specify fittings correctlyIdentify various patterns of fittingsDefine different types of sketchesDemonstrate the proper use of measuring toolsCalculate dimensions and interpret piping symbolsPerform basic measurements (expressed in feet, inches, and fractions)Accurately measure pipes, threads, runs and angles related to plumbing installationsCalculate pipe sizes for drainage and service linesIdentify tools used to install plumbing systemsExplain the various methods of assembling pipe
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. NOTE: Prerequisites: Must be employed by a Master Plumber.
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.
Prerequisites: 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.
Prerequisites: 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. NOTE: Prerequisites: Must have completed one year apprenticeship and must be employed by a Master Plumber.
Upon successful completion of this course, students should 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
Prerequisites: PLB 100 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. NOTE: Prerequisites: Must have completed two years apprenticeship and must be employed by a Master Plumber.
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.
1 Credit 3 Weekly Lecture Hours

PLB 110 Introduction to Plumbing
This introductory course in the Plumbing Technology Certificate program exposes students to the foundational knowledge needed to develop skills in the plumbing trade. This course presents basic plumbing concepts, plumbing lexicon and terminology, as well as the use of critical plumbing tools and equipment. Students also learn the basics of applications and installation for a residential plumbing system.
Upon successful completion of this course, students should be able to:
Describe the history of plumbing systems.
Use appropriate terminology in discussing plumbing projects and assignments.
Demonstrate knowledge of health and safety practices in the plumbing trade.
Distinguish plumbing tools and their uses.
Examine and identify plumbing configurations commonly used in a domestic water system.
Identify plumbing materials used in supply and drainage of a domestic water system.
Define major components of domestic plumbing.
Demonstrate knowledge of the sources and solvency of domestic water.
Corequisites: REA 050 or ENG 099 or REA 075.
3 Credits 3 Weekly Lecture Hours

PLB 111 Faucets & Fixture Systems
This course focuses on fixtures and faucets used in domestic plumbing applications. It includes, but not limited to complete bathroom, kitchen, and laundry room fixtures, This course also emphasizes common design theories. Upon successful completion of this course, students should be able to: Identify various fixtures and their applications in industry. Demonstrate an understanding of the mechanical operations of fixtures and faucets. Explain troubleshooting techniques used in addressing plumbing problems. Demonstrate an understanding of ADA requirements in relation to domestic plumbing systems. Model layouts and designs for new bathrooms and kitchens. Illustrate rough installations of plumbing fixtures.
Upon successful completion of this course, students should be able to:
Identify various fixtures and their applications in industry.
Demonstrate an understanding of the mechanical operations of fixtures and faucets.
Explain troubleshooting techniques used in addressing plumbing problems.
Demonstrate an understanding of ADA requirements in relation to domestic plumbing systems.
Model layouts and designs for new bathrooms and kitchens.
Illustrate rough installations of plumbing fixtures.
Prerequisites: PLB 110.
Corequisites: TCS 141.
3 Credits 3 Weekly Lecture Hours

PLB 112 Plumbing Residential Service
This course presents an in-depth study of residential plumbing services. The course prepares students to diagnose and solve problems with potable water and waste water systems. In addition, students will learn how to work with fixtures, faucets, and equipment associated with residential plumbing systems.
Upon successful completion of this course, students should be able to:
Identify potable water and waste water delivery systems.
Demonstrate an understanding of problems related to potable water and waste delivery systems.
Troubleshoot and repair plumbing fixtures and faucets.
Identify pumps and their applications in domestic plumbing systems.
Prepare domestic plumbing systems for seasonal temperatures changes.
Detect in fixtures, the sources of leaks, odors and sounds reported by consumers.
Demonstrate competencies in customer services and professionalism.
Prerequisites: PLB 111 and HVA 106.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

PLB 190 Plumbing Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

PLB 194 Plumbing Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

PLB 199 Plumbing Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes
3 Credits

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, tooled and test equipment, transformers, electric heating components, wiring diagrams, practical wiring of a heating appliance, and troubleshooting. NOTE: Prerequisites: Must have completed two years apprenticeship and must be employed by a Master Plumber.
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.
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. NOTE: Prerequisites: Must have completed three years apprenticeship and must be employed by a Master Plumber.
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.
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 backflow 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. NOTE: Prerequisites: Must be employed by a Master Plumber.
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.
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. NOTE: Prerequisites: NOTE: Prerequisites: Must be employed by a Master Plumber.
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.
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. NOTE: Prerequisites: Must be employed by a Master Plumber.
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.
5 Credits

PLB 210 Drains and Sewers
This course focuses on residential drainage and venting systems. It provides explanations of the elements and processes involved in the drainage systems, as well as instructions on appropriate applications. Student will also learn how to diagnosis blockage and slow drain problems associated with improper installation, inferior materials and improper venting.
Upon successful completion of this course, students should be able to:
Design residential drainage, waste and venting systems.
Determine proper fall and sizing for common bathroom groups.
Differientiate between public and private sewage disposals systems.
Identify obstructions in branch drains, waste and soil lines.
Diagnose problems in drainage and venting systems.
Install testing equipment according to local code requirements as pertains to drain lines and venting.
Prerequisites: PLB 112.
3 Credits 3 Weekly Lecture Hours

PLB 211 Advanced Plumbing
This course introduces advance piping principles as they apply to the plumbing industry. Students learn to identify and use a variety of piping, fittings, and materials in domestic water and drainage installations. These installations could be in new or retro-fit applications.
Upon successful completion of this course, students should be able to:
Identify various material, components, and accessories for water and drainage installation and venting applications.
Explain the differences in piping and fittings used in domestic water systems and drainage systems.
Demonstrate various installation techniques for copper, plastic and domestic water lines.
Idenify drainage fitting patterns, bend, degrees and their common application.
Calculate pitch and grade.
Connect different drainage fittings of dissimilar materials.
Design a bathroom draw a sketch of pipe.
Evaluate gas piping distribution and associated accessories.
Design gas line based on BTU requirements.
Demonstrate knowledge of drilling, boring, and notching techniques as well as installations.
Apply the appropriate techniques to install, repair, and maintain pipes in accordance with local and international plumbing codes.
Prerequisites: PLB 210.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

PLB 212 Installation of Plumbing Related Fixtures
The purpose of this course is to help students develop the fundamentals skills required to install plumbing related fixtures, faucets and appliances in residential homes. The course builds on the skills students acquire in the introductory Faucets and Fixtures course.
Upon successful completion of this course, students should be able to:
Install selected fixtures.
Adjust applications for proper appearance and function.
Analyze conditions that impact the installation of fixtures.
Demonstrate knowledge of code requirements for residential fixtures.
Demonstrate knowledge of water and drainage testing systems in preparation for testing.
Prerequisites: PLB 211.
2 Credits 1 Weekly Lecture Hour
1 Weekly Lab Hour

PLB 213 Principles of Prod Hot Water
This course presents the principles of heating water for consumption in a variety of applications. Students also learn the theories and practice of using different fuels to produce hot water systems. In addition, they gain knowledge of several types of hot water systems configurations as well as how to install residential hot water heating systems.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of the theory of British Thermal Unit.
Explain the principles of domestic hot water heating and circulation.
Analyze the different energy-fuel sources for hot water.
Explain the advantages and disadvantages of various fuel options.
Explain the process for selecting the proper water heater to meet the consumer requirements.
Describe the different hot water heating distribution systems.
Identify the valves, safety devices and control components of domestic hot water heating systems.
Demonstrate an understanding o fthe combustion and venting processess of gas and oil fired hot water units.
Troubleshoot gas, electric, and oil water heater systems.
Discuss layout of solar hot water heaters.
Describe the operation of residential boilers.
Demonstrate an understanding of radiant heating systems.
Prerequisites: PLB 212.
3 Credits 3 Weekly Lecture Hours

PLG - Paralegal Studies

PLG 100 Introduction to the Paralegal Profession
This course provides an overview of the paralegal profession while focusing on the role of the paralegal in the legal profession, the legal and ethical rules that determine unauthorized practice of law, and key legal terminology used in the profession. While developing critical thinking and legal reasoning skills, students will be introduced to such concepts as common law, constitutional foundation in the American legal system, federalism, and differences between the federal and state court systems.
Upon successful completion of this course, students should be able to:
Describe the role of the paralegal in trial preparation and proceedings, and settlement negotiations.
Describe and analyze the situations of unauthorized practice of law both from the ethical and legal point of view and other relevant legal issues.
Identify the different government structures and judicial courts at the federal, state, and local level.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

PLG 110 Legal Research and Writing I
This course introduces basic legal research and writing skills. Students are taught the basics of researching issues of substantive and procedural law as well as how to draft basic legal documents. This course also introduces students to traditional law library resources, such as Black's Law Dictionary, U.S. Code, the Pennsylvania Code, Federal Reporter, Pennsylvania Reporter, Atlantic Reporter, and legal treatises. In addition, students will learn about online research sources including Lexis® and the official federal and Pennsylvania State Courts websites. Students need to obtain a C or higher in the course in order to take any course that requires PLG 110 as a prerequisite.
Upon successful completion of this course, students should be able to:
Differentiate between the various sources and methods used to research the law.
Conduct and identify different methods of legal research.
Identify and analyze legal issues.
Use critical thinking to apply the law to facts presented in hypothetical case scenarios.
Write legal memoranda that demonstrates an understanding of legal issues.
Discuss relevant ethical issues.
Corequisites: PLG 100.
3 Credits 3 Weekly Lecture Hours

PLG 120 Legal Research and Writing II
This course builds upon the knowledge and skills acquired in Legal Research and Writing I to research substantive and legal issues with more complexity and greater depth. Students will draft more intricate and varied legal documents including different forms of discovery, motions, and memoranda in support, orders, trial briefs, final pretrial orders, and appellate briefs. NOTE: Prerequisites: PLG 120 with grade "C" or better.
Upon successful completion of this course, students should be able to:
Apply principles of legal research and writing to drafting discovery documents, motions, memoranda of law, trial and appellate briefs, and various other legal documents.
Properly format legal documents and cite legal references.
Compose written communications with attorneys, courts, and clients.
Discuss relevant ethical issues.
Prerequisites: 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. Covers law office applications of client management software, billing software, LexisNexis® Academic, and various state and federal websites. Students will use appropriate software to perform client conflicts checks, for timekeeping and file management, to prepare and maintain a database for each client, to organize and safeguard documentary evidence, and to assist during trial preparation and trial.
Upon successful completion of this course, students should be able to:
Identify and use productivity software applicable to various business and legal environments.
Comprehend the impact of modern technologies on law office and courtroom procedures and apply such technologies and management software to assigned hypothetical legal work and tasks.
Apply the relevant computer software and applications applicable to legal environments.
Apply communication and collaboration applications commonly used in the legal and business environments.
Identify the ethical and privacy issues that arise from the use of technology and the law.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

PLG 140 Contract Law
This course provides in-depth analysis of contract law including contract formation and the elements of an enforceable contract, rights and obligations of the parties to a contract, contract performance and discharge, elements of breach of contract, defenses to a claim of breach, remedies for breach, implied-in-law contracts, implied-in-fact contracts, promissory estoppels, and secured transactions. Included in the course is a study of the Sales and Commercial paper provisions of the Uniform Commercial Code. Specific contracts that are subject to much litigation are examined and discussed. Application of contract drafting techniques will be stressed. Ethical issues related directly to contract law will be discussed.
Upon successful completion of this course, students should be able to:
Discuss the elements of a contract.
Discuss relevant ethical and constitutional issues.
Compare and/or contrast different contractual agreements.
Explain the various modes of discharging a contract and the remedies available for breach of contract.
Analyze and draft contracts that comply with the provisions of the Uniform Commercial Code with emphasis on Article 2 (Sales) and Article 3 (Commercial Paper).
Corequisites: PLG 110.
3 Credits 3 Weekly Lecture Hours

PLG 197 Paralegal Practicum and Legal Ethics
This course is specifically designed for part-time/evening students that need to satisfy the internship requirement for the Paralegal Studies Program, and will meet in a traditional classroom setting. As with the traditional internship, there are two components to this course. The first component involves a practicum where students work directly under the direction and supervision of an attorney and/or experienced paralegal in a traditional classroom setting. In a controlled environment, students will learn how to interview clients, prepare and monitor client files, set up interview schedules, and perform various administrative duties relating to practical work operations in a legal office. The second component covers the fundamental principles governing the ethical practice of law for both lawyers and paralegals. In addition, this segment of the course provides students with the necessary tools to identify and resolve ethical problems as well as provide practical tips to implement in everyday practice. Students will also examine the rules of ethics peculiar to the practice of law and the crucial role they play in the profession of a paralegal. This course cover the regulation of the legal profession, the unauthorized practice of law, client confidentially, conflicts of interest, advertising and solicitation, client fees and fee sharing, and specific examples of Pennsylvania's Rules of Professional Conduct. NOTE: Need to obtain Director of Paralegal Studies approval and "C" or better in prerequisites.
Upon successful completion of this course, students should be able to:
Develop professional level skills in oral and written communications.
Develop a first-hand understanding of law-related office organizations and their internal systems, such as for timekeeping, billing and file management.
Acquire a sound, contextual understanding of legal and professional ethics, including, but not limited to, regarding client confidentiality, conflict of interest, and the unauthorized practice of the law.
Create a portfolio of work samples (or writing samples).
Prerequisites: PLG 110 and PLG 120 and PLG 140 and PLG 210 and PLG 240.
3 Credits 3 Weekly Lecture Hours

PLG 199 Paralegal Experience and Legal Ethics
This course is designed for the day/full-time students that need to satisfy the internship requirement for the Paralegal Studies Program. There are two components to this course. The first component involves an internship with a local law firm, corporate law department, government agency, or non-profit. With the assistance of the Director of Paralegal Studies and the Office of Student Employment Services and Coops, students will need to secure an internship. Students are required to intern a minimum of 180 hours in the paralegal field. The second component requires students to meet one hour per week to discuss job related issues and cover the fundamental principles governing the ethical practice of law for both lawyers and paralegals. In addition, this segment of the course provides students with the necessary tools to identify and resolve ethical problems as well as provide practical tips to implement in everyday practice. Students will also examine the rules of ethics peculiar to the practice of law and the crucial role they play in the profession of a paralegal. This course covers the regulation of the legal profession, the unauthorized practice of law, client confidentiality, conflicts of interest, advertising and solicitation, client fees and fee sharing, and specific examples of Pennsylvania's Rules of Professional Conduct. NOTE: Prerequisites: PLG 110 and PLG 120 with grades "C" or better, PLG 140, PLG 210, and PLG 240. Need to obtain Director of Paralegal Studies approval.
Upon successful completion of this course, students should be able to:
Develop professional level skills in oral and written communications.
Develop a first-hand understanding of law-related office organizations and their internal systems, such as for timekeeping, billing, and file management.
Acquire a sound, contextual understanding of legal and professional ethics, including, but not limited to, regarding client confidentiality, conflict of interest, and the unauthorized practice of the law.
Create a portfolio of work samples (or writing samples).
Prerequisites: PLG 110 and PLG 120 and PLG 140 and PLG 210 and PLG 240.
4 Credits 1 Weekly Lecture Hour

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, post-nuptial 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.
Prerequisites: PLG 110.
3 Credits 3 Weekly Lecture Hours

PLG 210 Civil Litigation and Tort Principles
This course focuses on the applications of the principles of tort law and civil litigation, and emphasizes the paralegal's role in the civil and litigation process. Students will receive a thorough overview of the applicable constitutional issues that arise in tort law, rules of civil procedure, and rules of evidence as well as an introduction to different resolution methods available through the state and federal court systems; in particular, alternative dispute resolution methods applicable to negligence cases. Lastly, this course provides students with the necessary foundation to prepare and write pleadings and other applicable court documents, prepare for discovery, and assemble proper documentation for trial. NOTE: Prerequisites: PLG 120 with grade "C" or better and PLG 140*. * Course marked with a star may be taken concurrently with Director of PLG approval.
Upon successful completion of this course, students should be able to:
Conduct legal research of basic negligence liability concepts applied to various intentional and unintentional torts and the applicable defenses, and then use critical thought to analyze the results of such research.
Comprehend fundamental constitutional issues surrounding tort law.
Discuss the theories of damage recovery applicable to tort matters.
Discuss negligence problem resolution through court litigation and alternative remedies of negotiation, arbitration, and mediation, as well as the paralegal's role in each scenario.
Discuss relevant ethical issues.
Prerequisites: PLG 120.
3 Credits 3 Weekly Lecture Hours

PLG 211 Civil Litigation and Tort Applications
This course focuses on the application of the principles of tort law and civil litigation learned in Civil Litigation and Tort Principles, with an emphasis placed on deepening the student's understanding of the paralegal's role in the civil and litigation process. Students will be taught the role of the paralegal in writing briefs and researching the law in the trial and appellate process. In addition, students will learn how to properly prepare and draft appellate briefs and other documents to be filed with an appellate court.
Upon successful completion of this course, students should be able to:
Accurately apply Court Rules of Civil Procedure and rules of evidence when filing and drafting trial and appellelate court documents.
Prepare and write pleadings and other documents with trial court practice.
Prepare and draft appellate briefs.
Prerequisites: 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 fundamentals, material devoted to the legal concepts of ownership, the laws that govern real estate transactions, and material that discusses brokerage and related activities. In addition, this course examines the tasks performed by lawyers and their representatives in representing buyers and sellers in the transfer of real property interest and the relationships of between landlords and tenants. Discussion and analysis of real-property law includes possession, ownership and transfer of real property, land-use controls, environmental issues, contracts, agreements and financing, federal and state laws and regulations, taxes and liens, land title issues, ethics, and the business of real estate. NOTE: Prerequisites: PLG 140*. * Course marked with a star may be taken concurrently with Director of PLG approval.
Upon successful completion of this course, students should be able to:
Analyze the basic principles of property law.
Apply principles of real property law to the preparation of forms common to real estate transactions.
Discuss relevant ethical and constitutional issues.
Prerequisites: PLG 140.
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.
Gather information, complete and file inventory.
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.
Prerequisites: PLG 110.
3 Credits 3 Weekly Lecture Hours

PLG 240 Criminal Law and Procedure
This criminal law and procedure course introduces the foundations of criminal law and rules of criminal procedure. Students will be introduced to the elements of crimes against persons and property as well as legal defenses to criminal prosecution. This course also covers evidentiary issues and constitutional concerns, along with pretrial considerations and procedures, trial, sentencing, punishment, and appellate review. There is an emphasis placed on the preparation of legal documents relevant to criminal cases and the proper preparation of case files.
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 case file that requires documentation of key facts, and the maintenance and organization of applicable case file documents.
Identify ethical and constitutional law issues.
Corequisites: PLG 100.
3 Credits 3 Weekly Lecture Hours

PLG 241 Administrative Law
This course introduces the paralegal student to the laws involving administration of government by various departments, agencies, boards and commissions that implement and enforce government law and policy. The student will be taught to 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 US 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 VII.
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.
Prerequisites: 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.
Prerequisites: 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 the processing of the 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

PLG 244 Labor and 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 040 or MAT 050). Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

POL 120 American National Government
American Government introduces students to the concepts, functions, and structures of the United States government. It undertakes an analysis of the U. S. national political system with a focus on the role of individuals in the governmental process, and the nature of the interactions that take place among the various branches and levels of government. Analysis will be made of civil rights and liberties that has maintained America as the most culturally diverse country in the world.
Upon successful completion of this course, students should be able to:
Assess the political economy and historical underpinnings of the American system to the principles that were purported.
Contrast the structure and organization of the executive, legislative, judiciary branches of government with the actual mechanisms of the system.
Analyze the struggle for civil liberties and civil rights.
Assess political factors and dynamics of democracy and actors within the system: citizens, political parties, interest groups, the media, and electoral process.
Examine public policies with regard to populations throughout history.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ)
Corequisites: (ENG 050 and REA 050) or ENG 099 or REA 075.
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. NOTE: Prerequisites: Students are encouraged to participate in civil, political and community activities in a democratic society.
Upon successful completion of this 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 designed to encourage, enhance and heighten student participation in our democratic society. American Presidency introduces students to the concepts, functions, and structures of the United States Constitution. It undertakes an analysis of the U. S. Presidents and their exercise of power, historically and in the present.
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 this 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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

POL 211 Modern Political Theory
The goal of Modern Political Theory is to examine the origin, purpose and role of current political thought and action. The European Renaissance in the 16th century to the Industrial Revolution in the 19th century, produced a philosophical movement in Western thought, referred to as "modernity" that evolved from and coincides with the expansion of capitalism and imperialism. This class will expand on the modern classification and include contemporary thinkers, African descendants, and women through Feminist thought. Class discussions will challenge many presumptions about political life. In addition,the exploration of the major tenets of identifiable theorists will be applied to current societal thinking and actions.
Upon successful completion of this course, students should be able to:
Describe key ideas such as order, human nature, freedom, justice, community, and equality that animated the great thinkers of ancient, medieval, and modern political thought.
Enumerate fundamental tenets of major ideologies and assess the impact of these ideologies in today's political landscape.
Discern the continued relevance of historical ideas about government institutions and the citizenry to the present political landscape.
Prerequisites: POL 120.
3 Credits 3 Weekly Lecture Hours

POL 225 Constitutional Law
This course introduces the student to the interpretation of the United States Constitution by the Supreme Court through a series of prominent decisions from leading cases. The parameters of the Courts power over the states will be established by analyzing the history of federalism. The Supreme Court's relationship to the executive and legislative branches will be ascertained by the role of the Court in determining the constitutionality of their actions. An examination of the rights of the citizenry will be investigated through the balancing tests between protecting the rights of the individual and the well being of society as a whole as evidenced in their decisions regarding such rights.
Upon successful completion of this course, students should be able to:
Discern the power relationships among branches of government (checks and balances) and between levels of government (federalism).
Analyze important constitutional provisions, historically critical Supreme Court decisions, as well as areas of contemporary interest.
Analyze the relationship between the government and its citizens, including restrictions on interference with individual freedom (civil liberties) and obligations to prevent discrimination and ensure equality (civil rights).
Assess the primary arguments made by advocates on most sides of the controversies surrounding the structure, organization and functioning of government.
Prerequisites: POL 120.
3 Credits 3 Weekly Lecture Hours

POL 226 Comparative Politics
This course will introduce students to the processes of World politics. The origin of international governments will be examined in addition to current issues and challenges that have evolved from that structure. The origins of both national and international governments will be assessed with particular focus given to the role of the economy within nation states. Emphasis will be placed the role of international organizations aimed at mediating affairs between international actors.
Upon successful completion of this course, students should be able to:
Examine how political systems are shaped by historical forces, political cultures, the international environment, economic conditions, ideologies, and the decisions of leaders and public participants in politics.
Compare institutions, electoral and voting processes, political systems, public policies, and political and economic development of different countries.
Assess the ways that ethnic, religious, and other minorities are affected by global decision making and power relations.
Apply scientific methodologies within the Political Science discipline, and construct typologies and assess political systems.
Prerequisites: POL 120.
3 Credits 3 Weekly Lecture Hours

PSY - Psychology

PSY 130 Personal and Career Development
This course examines the theoretical and empirical issues related to personal growth and career development. The purpose of this course is to increase self-awareness, understand the career development process, and practice the ability to effect personal change. Emphasis is on self-awareness, personal growth, and career exploration that is examined theoretically and applied to the self and others in a diverse society. Content includes identity development, self-assessment, social influence, self-esteem, mindfulness, career development, and behavior change.
Upon successful completion of this course, students should be able to:
Describe and apply the psychological theories fundamental to identity (self) development, personality, and behavioral change.
Demonstrate self-awareness by identifying their personality traits, interests, skills, and values.
Identify the factors that contribute to an individual's career development and apply this knowledge to their own career choices.
Summarize psychological factors that can influence the pursuit of a healthy lifestyle.
Describe how coping strategies, including mindfulness, can be applied to everyday living.
Explain how individual differences and worldview may influence beliefs, values, and interaction with others and vice versa.
College Academic Learning Goal Designation: Critical Reasoning (CR)
Corequisites: (ENG 050 and REA 050) or ENG 099 or REA 075.
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.
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.
College Academic Learning Goal Designation: Critical Reasoning (CR)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

PSY 190 Psychology Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designated to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulated a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

PSY 194 Psychology Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designated to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulated a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

PSY 199 Psychology Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designated to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulated a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
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, trait, behavioral, cognitive, and humanistic-existential perspectives to personal and interpersonal functioning. Biological influences on personality are also considered.
Upon successful completion of this course, students should be able to:
Detail the characteristics of psychodynamic theories.
Describe the Five-Factor and other trait approaches to personality.
Describe behavioral perspectives on personality.
Identify the characteristics of cognitive theories of personality.
Describe humanistic and existential personality views and the basics of positive psychology.
Discuss the role of biological processes in personality development and expression.
Explain how an eclectic blend of several major personality theories can be applied to common life situations and experiences.
College Academic Learning Goal Designation: Critical Reasoning (CR)
Prerequisites: 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.
Prerequisites: PSY 140 and 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 the helping process. The course is designed for individuals pursuing a career in social work, or other related human service fields of study. The focus is on development, synthesis, analysis and demonstration of critical reasoning in the use of the core skills that facilitate effective and culturally responsive helping relationships. This course includes both didactic instruction and the development of basic techniques through frequent, applied counseling skills lab activities and written self reflection assignments.
Upon successful completion of this course, students should be able to:
Apply the knowledge, values and skills of the Social Work or Psychology or Counseling profession at the introductory level and analyze the decisions made for use of certain counseling skills in practice lab activities.
Demonstrate the effective use of basic counseling skills for introductory practice.
Assess self-awareness by personal reflection and self-correction in periodic written personal evaluations showing the development of a professional identity and cultural competency.
Analyze and synthesize multiple sources of knowledge, including: prevention, intervention, theory, cultural competency and evaluation in the applied lab activities.
Demonstrate, in alignment with the NASW or APA or ACA Standards for Cultural Competency, the introductory level knowledge, values and counseling skills necessary to work from a strengths perspective with diverse populations.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ)
Prerequisites: (PSY 140 or SWO 101) and ENG 100.
3 Credits 3 Weekly Lecture Hours

PSY 204 Foundations of Addiction
The main goal of this course is for students to develop knowledge of the nature and complexity of addiction. Emphasis in this course is on developing an understanding of the addiction process utilizing a biopsychosocial perspective. Topics examined include, but are not limited to, addictions to substances, gambling, and other addictive behaviors. Prevention and treatment options will be discussed.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of the psychological perspectives of addiction.
Describe societal issues associated to addiction.
Explain the physiology of the addiction process.
Identify and describe the major substances and behaviors of abuse.
Explain the techniques involved in the treatment of addiction.
Identify programs that provide prevention services as well as those which provide rehabilitation programs and support services.
Identify populations where addiction is highly prevalent and explain the psychological and sociological factors that may be contributing to this phenomenon.
Identify legal and ethical standards involved in working with clients with addiction.
Prerequisites: PSY 140 or BIO 110 or BIO 150.
3 Credits 3 Weekly Lecture Hours

PSY 205 Human Sexuality
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 psychological 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:
Describe and explain the nature of human sexuality as a scientific discipline.
Describe and analyze major theoretical perspectives of human sexuality from biological, behavioral, social, political, and historical perspectives.
Identify and explain different research methods used to examine human sexuality and variations in sexual behavior.
Discuss psychological concepts, theories, and research findings to issues addressing human sexuality, gender, and sexual orientation.
Understand historical and contemporary issues surrounding sexuality in our society.
Demonstrate an understanding of the role of emotions in sexual expression.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ)
Prerequisites: PSY 140 or SOC 110.
3 Credits 3 Weekly Lecture Hours

PSY 210 Lifespan Human Development
This course investigates how and why people of diverse backgrounds change over time. It surveys theories, research and controversies of human development from conception to death. It analyzes the physical, cognitive and psycho-social development in ecological contexts from multidisciplinary perspectives. Emphasis is on how to promote well-being and growth, and to overcome developmental challenges throughout life span.
Upon successful completion of this course, students should be able to:
Identify the basic universal principles underlying human development.
Describe the physical, cognitive and psychosocial characteristics of lifespan development.
Explain major theories and methodologies related to lifespan human development.
Describe and analyze major changes across different stages throughout lifespan (prenatal, infancy, childhood, adolescence, adulthood, aging, and death and dying).
Identify and discuss the multi-disciplinary and multi-contextual characteristics of lifespan human development in today's global context.
Describe and discuss major crises, disabilities, undesirable developmental outcomes and the historical social/cultural influences (including inequality, discrimination) on developmental differences.
Identify and apply strategies for well-being and growth for optimal personal development in today's complex society.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: 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.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and PSY 140. Appropriate placement test scores may be accepted.
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. Psychodynamic, behavioral, cognitive, humanistic-existential, and socio-cultural perspectives will be considered.
Upon successful completion of this course, students should be able to:
Describe and compare ambiguities inherent in the psychological and cultural definitions of abnormality.
Identify and describe major historical and current theoretical perspectives regarding the causation of abnormal behavior and explain how each is regarded in society.
Identify and describe the major mental disorders and summarize the diagnostic criteria for each.
Define and give examples of key terms and research methods used in studying abnormal psychology.
Identify and describe the titles, training, and responsibilities of professionals working in the field of mental health.
List and describe the major treatment methods of mental disorders.
Identify major legal and ethical challenges in which law and abnormal psychology intersect.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ)
Prerequisites: PSY 140.
3 Credits 3 Weekly Lecture Hours

PSY 221 Social Psychology
This course examines theories and research in the study of the social influences on individual behavior. It explores the various ways people think about and relate to one another. Topics include self-concept, persuasion, conformity, and aggression. Emphasis is placed on diversity, social justice issues, and different perspectives on the interaction of person and context.
Upon successful completion of this course, students should be able to:
Apply psychological theory and research to social issues and problems.
Describe aspects of the self as they relate to social and cultural influences.
Assess the significance of attitudes on perception, moral judgment, prejudice and prosocial behavior.
Depict the impact of violence and aggression on the individual, the group and society.
Cite the ways in which social factors can dictate individual behavior.
Analyze the ways humans relate to one another, including prejudice and discrimination.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ)
Prerequisites: 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. Study is concentrated on understanding the legal and policy based frameworks which created and perpetuate group-based inequality for various people in the U.S.
Upon successful completion of this course, students should be able to:
Depict 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 US to become more democratic, and inclusive.
Describe the systematic ways that inequality due to race, socio-economic status, ethnicity, age, religion, gender, and sexual orientation are perpetuated and possibly eradicated by society's social institutions.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ)
Prerequisites: PSY 140 or SOC 110.
3 Credits 3 Weekly Lecture Hours

PSY 235 Educational Psychology
This course introduces students to theories, research, and applied topics related to teaching and learning. It studies developmentally appropriate education with learner diversity and multicultural influences. Emphasis is on how to effectively motivate learners through appropriate teaching design, class management and assessment, and how to connect theory to teaching and learning practices in today's global contexts.
Upon successful completion of this course, students should be able to:
Identify and evaluate major theories and approaches related to cognitive development, teaching and learning.
Analyze and evaluate learners' physical, cognitive and social-emotional characteristics of development.
Describe and analyze teacher's role in motivating learners.
Identify and discuss effective instructional design, class management, assessment, and other teaching/learning practices in today's global contexts.
Identify and analyze social/cultural influences (including discrimination and inequality) on learner distress, and accommodations for students from diverse (such as special needs, poverty, multicultural, multilingual and other) backgrounds.
Apply effective principles to promote self-understanding and personal/career development.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: PSY 140.
3 Credits 3 Weekly Lecture Hours

PSY 241 Child Development
This course examines physical, cognitive and psychosocial development in ecological contexts from conception to adolescence. It surveys various theories and research of child development, and examines social/cultural influences that may shape or compromise normal development and transitions in today's global contexts. Emphasis is on how to promote healthy growth and overcome developmental challenges during this life stage.
Upon successful completion of this course, students should be able to:
Identify and explain the basic principles underlying child development.
Describe and analyze the physical, cognitive and psychosocial characteristics of development from prenatal to adolescence.
Describe and explain major theories and research methods of child development.
Identify and evaluate major changes at different stages (prenatal, infancy, early childhood, middle and late childhood, adolescence).
Identify and discuss the multi-disciplinary and multi-contextual characteristics of child development in today's global context.
Describe and analyze social/cultural influences (including inequality, discrimination) on normal and atypical childhood development and transitions.
Identify and apply strategies for well-being and growth, to promote optimal personal/career development for both individual and family.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: PSY 140.
3 Credits 3 Weekly Lecture Hours

PSY 242 Adolescent Psychology
This course examines physical, cognitive and psychosocial development in ecological contexts from puberty to maturity. It surveys various theories and research of adolescent development. It examines social/cultural influences that may shape/compromise development and transitions in today's global contexts. Emphasis is on how to promote healthy growth and overcome developmental challenges during adolescence.
Upon successful completion of this course, students should be able to:
Identify and explain the basic principles underlying adolescent development.
Describe and analyze the physical, cognitive and psychosocial characteristics of development from puberty to maturity.
Describe and explain major theories and research methods of adolescent development.
Identify and discuss the multi-disciplinary and multi-contextual characteristics of adolescent development in today's global context.
Describe and analyze social/cultural influences (including inequality, discrimination, etc) on adolescent development and transitions.
Identify and apply strategies for well-being and growth, to promote optimal personal/career development for both individual and family.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: PSY 140.
3 Credits 3 Weekly Lecture Hours

PSY 255 Intro to Biological Psychology
Biological psychology (sometimes called physiological psychology or behavioral neuroscience) is the study of how different systems in the body, primarily the nervous system, coordinate to produce experience and behavior. This course is designed to be an introduction to this interdisciplinary field of study. Topics range from the cellular basis of neuronal activities, the physiological bases of motor control, sensory systems, motivated behaviors, and higher mental processes and disorders. This course is intended for students interested in the neurobiology of behavior, ranging from animal behavior to clinical disorders. Successful completion of this course will provide a strong foundation of basic knowledge and methodological competencies in Biological Psychology/Neuroscience required of Psychology majors at 4-year institutions.
Upon successful completion of this course, students should be able to:
Describe the structure and function of the nervous system, neuroanatomy, and the divisions of the nervous system.
Analyze the structure and function of neurons, the electrical and chemical communication between neurons, and the major neurotransmitters.
Describe and evaluate the biological and physiological basis of psychological experience and behavior (including sensory and motor experience, motivation, learning and memory, consciousness, reproductive behaviors, psychological disorders and addiction).
Understand developmental changes in the brain and nervous system across the lifespan.
Evaluate the psychological and behavioral consequences of damage to the physiological systems.
Interpret and communicate research findings within the field of biological psychology.
Prerequisites: PSY 140.
3 Credits 3 Weekly Lecture Hours

PSY 290 Adulthood and Aging
This course is an examination of the biological, physical, psychological, cognitive, affective, social and cultural changes that occur as people move from adulthood into old age. It explores the controversies, myths, and realities of growing older in America. As well, the course emphasizes the similarities and differences of adulthood and aging across cultures.
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 biological changes in adult development from adulthood to old age.
Describe the various cognitive changes in adult development, such as those related to memory, intelligence, thinking, and problem solving.
Evaluate the various theoretical explanations of cognitive, affective, socio-cultural and personality development in adult development through old age.
Evaluate the relevance of cross-cultural research findings in adult development and aging.
Examine multiple perspectives on death and dying, considering the individual, family, and culture.
Prerequisites: PSY 140.
3 Credits 3 Weekly Lecture Hours

REA - Reading

REA 030 Reading I
This initial course is for students who need to improve upon basic skills that aid in reading. This course is designed for students who must strengthen their comprehension, language usage, and strategic reading skills.
Upon successful completion of this 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.
3 Credits 3 Weekly Lecture Hours

REA 050 Reading II
Reading II is designed for students who need to improve their ability to understand and retain the material they read in college. Emphasis in the course 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.
Prerequisites: REA 030 or ESL 045. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

REA 075 Introduction to Reading and Writing
This class combines REA 050 and ENG 050 and emphasizes the relationship between reading and writing. It includes comprehensive review and writing practice in the fundamentals of English grammar, word choice, punctuation, and paragraph construction. Additionally, it is designed for students who need to improve their ability to understand and retain the materials they read in college. To this end, emphasis will be placed upon reading comprehension, language clues, structural clues, critical thinking, and strategic reading. NOTE: Credits from the course are not applicable toward a degree Prerequisites: Placement via the College Placement process, or successful completion of all required ESL classes. Students must be eligible for ENG 050 and REA 050 to place into this course.
Upon successful completion of this course, students should be able to:
Demonstrate critical reading, thinking, and writing in various rhetorical situations and make appropriate rhetorical choices for given writing tasks.
Demonstrate proficient comprehension of and a critical assessment of college-appropriate texts using strategic and critical reading.
Identify and use language and structural clues as aids to comprehension of reading materials.
Develop a thesis for an essay that will be supported with evidence.
Demonstrate that writing is a process.
Utilize basic research skills to produce a final, polished written product.
Apply formal conventions of written American English with respect to grammar, mechanics, and punctuation.
Prerequisites: ESL 043 and ESL 044 and ESL 045 and ESL 046. Appropriate placement test scores may be accepted.
5 Credits 5 Weekly Lecture Hours

REA 100 Critical Reading
Critical Reading addresses both literal and abstract comprehension strategies at a college level. Students will apply contextual reasoning, interpretive processing, figurative analysis and inferential reasoning to a variety of reading materials.
Upon successful completion of this course, students should be able to:
Differentiate between main idea and supporting details.
Recognize bias in a variety of materials.
Discriminate between the facts and opinions.
Demonstrate critical judgement and analytical thought in writing.
Apply interpretive and inferential analysis in order to read critically.
Evaluate persuasive and argumentative reasoning.
Prerequisites: REA 050 or REA 075 or ENG 099. Appropriate placement test scores may be accepted.
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. NOTE: Prerequisites require a grade of "C" or better.
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.
Prerequisites: RTH 100 and RTH 101 and BIO 150.
Corequisites: BIO 151.
Concurrent: RTH 103
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. NOTE: Prerequisites require a grade of "C" or better.
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.
Prerequisites: RTH 100 and RTH 101 and BIO 150.
Corequisites: BIO 151.
Concurrent: RTH 102
6 Credits
12 Weekly Lab Hours

RTH 104 Respiratory Therapy Summer Clinical I
The purpose of this course is to provide the student with the opportunity to utilize the clinical skills learned and practiced during the simulation lab in the clinical area of the hospital or other clinical institution. Students will be expected to perform the duties of a Respiratory Therapist under the direction of a licensed and credentialed Respiratory Therapist. This course is only open to students in the Respiratory Therapy Program. Because all courses in the Respiratory Therapy Program must be taken in a specific sequence, this course is designed only for the Summer semester. This allows the student the opportunity to gain extensive clinical experience, in an 8-hour day that would not be available during the Fall or Spring semesters. The RTH courses taken in the prior Fall and Spring semesters provide the necessary didactic and laboratory foundational experience necessary for the student to be successful in this clinical course. The student will also gain a realistic understanding of the professional requirements of a Respiratory Therapist while providing the continuity of caring for critically ill patients. NOTE College Academic Learning Goal Designation Information Technology (TC) when taken with RTH 105
Upon successful completion of this course, students should be able to:
Administer bronchopulmonary hygiene and modify therapy based on patient response.
Administer bronchopulmonary hygiene and ventilatory support to critically ill adult patients.
Assist physicians with special procedures and effectively communicate with the diverse members of the healthcare team during pulmonary rounds.
Properly clean and disinfect, maintain, and troubleshoot respiratory care equipment.
Demonstrate proficiency utilizing various Electronic Medical Record (EMR) systems.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: RTH 102 and RTH 103.
5 Credits

RTH 105 Respiratory Therapy Summer Clinical II
This course is a continuation of RTH 104: Summer Clinical I. It is a supervised clinical practice. The student is provided the opportunity to utilize the clinical skills learned and practiced during the simulation lab, as well as skills learned during Summer Clinical I. Students will be expected to perform the duties of a Respiratory Therapist under the direction of a licensed and credentialed Respiratory Therapist.This course is only open to students in the Respiratory Therapy Program. Because all courses in the Respiratory Therapy Program must be taken in a specific sequence, this course is designed only for the Summer semester. This allows the student the opportunity to gain extensive clinical experience, in an 8-hour day that would not be available during the Fall or Spring semesters. The RTH courses taken in the prior Fall and Spring semesters provide the necessary didactic and laboratory foundational experience necessary for the student to be successful in this clinical course. The student will also gain a realistic understanding of the professional requirements of a Respiratory Therapist while providing the continuity of caring for critically ill patients. NOTE: College Academic Learning Goal Designation Information Technology (TC) when taken with RTH 104
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 and surgery in the practice of respiratory care.
Administer bronchopulmonary hygiene and ventilatory support to critically ill adult patients.
Analyze and ensure accurate resulting of arterial blood gas sample results and various other types of lab samples utilizing a Blood Gas Machine and Laboratory Information System to determine cardiopulmonary function.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: RTH 102 and RTH 103 and RTH 104.
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. NOTE: Prerequisites: ENG 100 and CHE 110 with grades "C" or better. 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 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.
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.
Prerequisites: CHE 110 and ENG 100 and (MAT 100 or MAT 128 or MAT 135 or MAT 136 or MAT 151 or MAT 152 or MAT 160 or MAT 161 or MAT 200 or MAT 230 or MAT 260 or MAT 261). Appropriate placement test scores may be accepted.
Corequisites: BIO 150.
8 Credits 60 Weekly Lecture Hours
120 Weekly Lab 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.
Prerequisites: RTH 105.
Corequisites: RTH 201 and 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.
Prerequisites: RTH 105.
Corequisites: RTH 200 and RTH 204.
6 Credits
12 Weekly Lab 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.
Prerequisites: RTH 201.
Corequisites: RTH 203 and 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.
Prerequisites: RTH 201 and RTH 204.
Corequisites: RTH 202 and RTH 205.
6 Credits
12 Weekly Lab 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.
Prerequisites: RTH 105.
Corequisites: RTH 200 and RTH 201.
2 Credits
4 Weekly Lab 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.
Prerequisites: RTH 201 and RTH 204.
Corequisites: RTH 202 and RTH 203.
2 Credits
4 Weekly Lab 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.
Prerequisites: RTH 203 and RTH 205.
4 Credits

SCI - Science

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 "buttom-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.
Prerequisites: REA 050 or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: ENG 100.
3 Credits 3 Weekly Lecture Hours

SCI 150 STEM Topics
STEM Topics is a 1-credit course designed to introduce students majoring in STEM fields to skills and topics of importance to Science, Technology, Engineering, and Mathematics. Presented by both Delaware County Community College faculty/staff and invited speakers, the weekly one-hour meetings include explorations of STEM-related transfer programs and careers, internet research methods, identification of primary research, research design, and technical writing and communication.
Upon successful completion of this course, students should be able to:
Use the internet as a research tool in STEM disciplines.
Evaluate internet sources for credibility and authority in STEM disciplines.
Differentiate between primary and secondary research in STEM disciplines.
Produce and present a research design to address a proposed hypothesis.
Identify potential STEM transfer programs based on students' interest areas.
Develop career goals in a chosen STEM field.
Prerequisites: ((ENG 050 and REA 050) or ENG 099 or REA 075) and (MAT 050 or MAT 060). Appropriate placement test scores may be accepted.
1 Credit 1 Weekly Lecture Hour

SCI 190 Mathematics and Natural Science Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit 1 Weekly Lecture Hour

SCI 194 Mathematics and Natural Science Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits 2 Weekly Lecture Hours

SCI 199 Mathematics and Natural Science Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
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
This course studies the factors that determine social organization, social injustice, behavior and change as they are considered in relation to the individual student's own life and society. Study is concentrated on social intervention, culture, social class, national and global inequality, institutions and socialization.
Upon successful completion of this course, students 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 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.
Describe the systematic ways that oppression and privilege are built into and perpetuated by social institutions.
Describe the various ways in which global interdependence impacts the social, economic and political society.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
3 Credits 3 Weekly Lecture Hours

SOC 120 Social Problems
This course studies contemporary social problems from theoretical and practical perspectives. Theoretical assessments of the national and international origins and etiology that support and sustain social injustice, inequality, and conflict will be supported through data sources.
Upon successful completion of this course, students should be able to:
Apply the sociological perspective to the national and international social problems.
Describe the origin, development, and society's possible treatment of at least two contemporary and social problems detailing how the rules of society and its social institutions attempt to sustain, perpetuate and/or eradicate inequity and injustice.
Describe the systematic ways that oppression is facilitated by powerful people and society's social institutions.
Describe the various ways in which global interdependence impacts the people in society.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted. *Courses marked with a star may be taken concurrently.*
3 Credits 3 Weekly Lecture Hours

SOC 131 Sport, Culture and Society
Sports are cultural phenomena encompassing many facets of social life. Sports, Culture, and Society is designed to analyze society's engagement in competitive sports as spectators. The course will explore the role of sports in society and the various types of social responses to the culture of sports. Topics that will be analyzed include media and sports, social inequality and sports, youth and sports, education and sports, gender and sports, politics and sports, violence in sports, and ethics in sports. The course will focus upon current events in the American culture that influence how people in society respond to sports.
Upon successful completion of this course, students should be able to:
Understand how and why sports have been created and organized in particular ways.
Articulate the ways that social, political and economic factors influence the growth, popularity and visibility of sports in society.
Describe the role sports play in school activities for youth.
List ways in which the media depict sports relative to gender.
Describe the positive and negative outcomes of participation in sports on group engagement and social growth.
Describe the manners in which sports motivate aggressive and violent behavior in society.
Understand the social processes that occur in connection with sports (competition, conflict, socialization, group cooperation).
Evaluate how sports have an impact on people's thoughts about their bodies and about gender, race/ethnicity, social class and disability.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

SOC 180 Marriage and The Family
This course explores various types of family relationships in society and how sustaining and changing the values, beliefs and rules in relationships are supported and altered through society's institutions in diverse societies.
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.
Describe how the rules in institutions shape perceptions of what constitutes a family and may reinforce inequality and discrimination.
Explain human reproduction, including prenatal aspects, childbirth, contraceptive techniques and socially transmitted diseases.
Assess possible future changes in what family forms, marriage forms and living arrangements are as they may affect the American family.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

SOC 210 Cultural Anthropology
The societal and individualistic characteristics of culture are explored by examining and comparing several cultures. The evolution of community living from hunting and gathering societies to contemporary urban and suburban and there effects of individual behavior are 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.
Describe the systematic ways that social institutions may inhibit cultural change and reinforce inequality.
Describe global interdependence from a "world view" and how it impacts various cultures and societies.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ), Global Understanding (GU)
Prerequisites: 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. Study is concentrated on understanding the legal and policy based frameworks which created and perpetuate group-based inequality for various people in the U.S.
Upon successful completion of this course, students should be able to:
Depict 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 US to become more democratic, and inclusive.
Describe the systematic ways that inequality due to race, socio-economic status, ethnicity, age, religion, gender, and sexual orientation are perpetuated and possibly eradicated by society's social institutions.
Prerequisites: SOC 110 or PSY 140.
3 Credits 3 Weekly Lecture Hours

SOC 219 The Sociology of Race And Immigration
In this class we will scrutinize the Eurocentric construction of race, delving into how it was used as a central organizing principle in North American society. We will also explore racism as an ideology, and how it was and is used to create, promote and perpetuate racial inequality. In focusing on racism, we will discuss social policies which promote (d) and protect(ed) white wealth, while at the same time denying people of color access to opportunity and resources. In this context we will discuss white privilege, color-blindness, and affirmative action policies. In addition, we will research the immigration debate. In order to do this, we will work on defining the catch-all term "diversity, and then examine (1) immigration to the USA, paying close attention to the manner in which various group experiences were (and are) similar to, and different from, one another; (2) theories of integration; and (3) the multiculturalism debate. 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 dynamics of group attempts to access power, and how social movements have shaped and transformed U.S. social fabric. This class will be both historical in nature and present-day oriented. We will take the time to study the past because without such knowledge we can neither understand nor examine the current system of racial domination. Such inquiry will help shed light on how historical circumstances continue to impact and shape current racialized identities and disparities. A field trip may be required.
Upon successful completion of this course, students should be able to:
Describe the social construction of racial and ethnic categories.
Demonstrate critical thinking on issues of race, ethnicity, racism and racial stratification.
List the racial contradictions inherent in US society, and different strategies toward resolving them.
Describe various immigrant experiences in the US using macro theories of integration.
Analyze public policies and laws which shape group identity and social movements.
Present ideas clearly in a formal and professional manner.
College Academic Learning Goal Designation: Diversity and Social Justice (DJ)
Prerequisites: SOC 110 or SOC 215 or PSY 225.
3 Credits 3 Weekly Lecture Hours

SOC 220 Social Psychology
This course examines theories and research in the study of the social influences on individual behavior. It explores the various ways people think about and relate to one another. Topics include self-concept, persuasion, conformity, and aggression. Emphasis is placed on diversity, social justice issues, and different perspectives on the interaction of person and context.
Upon successful completion of this course, students should be able to:
Apply psychological theory and research to social issues and problems.
Describe aspects of the self as they relate to social and cultural influences.
Assess the significance of attitudes on perception, moral judgment, prejudice and prosocial behavior.
Depict the impact of violence and aggression on the individual, the group and society.
Cite the ways in which social factors can dictate individual behavior.
Analyze the ways humans relate to one another, including prejudice and discrimination.
Prerequisites: 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 Methodology
This course investigates and analyzes both quantitative and qualitative research methodology. It is designed to give students the skills to examine social science issues through creating and utilizing empirical research. Study is concentrated on experimentation, types of research sources, survey 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.
College Academic Learning Goal Designation: Information Literacy (IL)
Prerequisites: (MAT 050 or MAT 060 or MAT 100 or MAT 110 or MAT 111 or MAT 120 or MAT 121 or MAT 125 or MAT 126 or MAT 128 or MAT 135 or MAT 136 or MAT 140 or MAT 141 or MAT 150 or MAT 151 or MAT 152 or MAT 160 or MAT 161 or MAT 200 or MAT 210 or MAT 230 or MAT 260 or MAT 261) and ENG 100 and (SOC 100 or SOC 110 or SOC 120 or SOC 131 or SOC 180 or SOC 210 or SOC 215 or SOC 219 or SOC 220 or SOC 240 or PSY 130 or PSY 140 or PSY 200 or PSY 202 or PSY 203 or PSY 204 or PSY 205 or PSY 210 or PSY 215 or PSY 220 or PSY 221 or PSY 225 or PSY 235 or PSY 241 or PSY 242 or PSY 290).
3 Credits 3 Weekly Lecture Hours

SPA - Spanish

SPA 101 Elementary Spanish I
This is a first semester introduction to the Spanish language and Hispanic cultures. It is designed for beginning students with little or no previous exposure to the language. The emphasis is on the development of the three modes of communication: interpersonal, presentational, and interpretive, through the mastery of basic grammatical structures. Through the use of language and additional methods students will gain knowledge of cultural practices and perspectives in Spain and Latin America. Additionally, students will learn about political, economic, and socio-cultural differences and similarities within the Hispanic community in a global context. This course requires active participation in online activities as a mandatory component. Online courses may require use of a webcam. Native, heritage and or speakers of Spanish are encouraged to take the CLEP exam before enrolling in this course. NOTE: Two or less years of high school Spanish, or less than one semester of college study.
Upon successful completion of this course, students should be able to:
Students engage in conversation, provide and obtain information, express feelings and emotions, and exchange opinions in Spanish.
Students understand and interpret written and spoken Spanish on basic level on a variety of topics.
In Spanish, students present or communicate information, concepts and ideas on a basic level to an audience of listeners or readers on a variety of global topics including, socio-economic issues, political issues, historical and environmental effects.
Through a global perspective, students will demonstrate an in-depth knowledge of similarities and differences between Spanish speaking practices, artistic expression, and popular culture.
Students demonstrate understanding of language through comparisons between Spanish and English.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

SPA 102 Elementary Spanish II
This course is a continuation of Elementary Spanish language and Hispanic cultures. It is designed for students who have completed SPA 101 or at least two years of recent successful high school Spanish. The emphasis is on the development of the three modes of communication: interpersonal, presentational, and interpretive, through the mastery of basic grammatical structures. Through the use of language and additional methods students will gain knowledge of cultural practices and perspectives in Spain and Latin America. Additionally, students will learn about political, economic, and socio-cultural differences and similarities within the Hispanic community in a global context. This course requires active participation in online activities as a mandatory component. Online courses may require use of a webcam. Native, heritage and or speakers of Spanish are encouraged to take the CLEP exam before enrolling in this course. NOTE: Two years of recent successful high school Spanish or SPA 101 Elementary Spanish I.
Upon successful completion of this course, students should be able to:
Students engage in conversation, provide and obtain information, express feelings and emotions, and exchange opinions in Spanish.
Students understand and interpret written and spoken Spanish on basic level on a variety of topics.
In Spanish, students present or communicate information, concepts and ideas on a basic level to an audience of listeners or readers on a variety of global topics including, socio-economic issues, political issues, historical and environmental effects.
Through a global perspective, students will demonstrate an in-depth knowledge of similarities and differences between Spanish speaking practices, artistic expression, and popular culture.
Students demonstrate understanding of language through comparisons between Spanish and English.
College Academic Learning Goal Designation: Global Understanding (GU)
Prerequisites: SPA 101 and ((ENG 050 and REA 050) or ENG 099 or REA 075). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

SPA 150 Spanish for Business & Law
Spanish for Business and Law is a course designed to provide students with common Spanish business and legal terminology used when doing business and practicing law in the United States and globally. In addition, students will be taught how to effectively communicate business and law concepts in Spanish.
Upon successful completion of this course, students should be able to:
Students will use verbal and written communication to have basic, meaningful, and accurate conversations in the course of doing business and practicing law in the United States and globally.
Utilize vocabulary with a basic ability to understand and communicate business and legal concepts in the course of doing business and practicing law in the United States and globally.
Students will be able to self-assess one's own biases and cultural competence to communicate effectively with Spanish speaking populations in the course of doing business and practicing law.
Students will identify cultural characteristics in Latinx cultures living in the United States.
Students will self-assess and adjust their communication style to build relationships with persons of Latinx cultures using language that promotes trust.
Prerequisites: SPA 101 and ((ENG 050 and REA 050) or ENG 099 or REA 075). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

SPA 152 Spanish Practicum for Early Childhood Education
Spanish Practicum for Early Childhood Education is a course designed to provide students with common Spanish terminology used in the early childhood education classroom and when interacting with families. In addition, students will be taught how to effectively communicate with Latinx children and families in Spanish.
Upon successful completion of this course, students should be able to:
Use verbal and written communication to have meaningful and accurate conversations with parents and children.
Effectively communicate children's health, safety, and nutrition needs in Spanish with Spanish speaking families.
Effectively communicate children's developmental needs in Spanish with Spanish speaking families.
Self-assess one's own biases and cultural competence to communicate effectively with families.
Identify cultural characteristics in Latinx cultures living in the United States.
Self-assess and adjust their communication style to build relationships with families of Latinx children using language that promotes trust.
Develop strategies for advocating for Latinx families within the educational community.
Prerequisites: SPA 101 and ((ENG 050 and REA 050) or ENG 099 or REA 075). Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

SPA 201 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. NOTE: Alternate Pre-requisite 3 years of H.S. Spanish or 1 year of college Spanish.
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.
Prerequisites: SPA 102.
3 Credits 3 Weekly Lecture Hours

SPA 202 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 a 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. NOTE: Alternate pre-requisite - 4 years HS 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.
Prerequisites: SPA 201 or SPA 111.
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 social work and 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 base needed to effectively work as a culturally competent, social work or 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 a Social Worker and a 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 social work.
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, 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 staff member.
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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 3 Weekly Lecture Hours

SWO 201 Domestic Violence: Impact on Individuals, Families and Communities
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 social work 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 social 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.
Prerequisites: ENG 100 and PSY 140.
3 Credits 3 Weekly Lecture Hours

SWO 203 Counseling Skills
This experiential course is a one-semester introduction to the basic skills used in the helping process. The course is designed for individuals pursuing a career in social work, or other related human service fields of study. The focus is on development, synthesis, analysis and demonstration of critical reasoning in the use of the core skills that facilitate effective and culturally responsive helping relationships. This course includes both didactic instruction and the development of basic techniques through frequent, applied counseling skills lab activities and written self reflection assignments.
Upon successful completion of this course, students should be able to:
Apply the knowledge, values and skills of the Social Work or Psychology or Counseling profession at the introductory level and analyze the decisions made for use of certain counseling skills in practice lab activities.
Demonstrate the effective use of basic counseling skills for introductory practice.
Assess self-awareness by personal reflection and self-correction in periodic written personal evaluations showing the development of a professional identity and cultural competency.
Analyze and synthesize multiple sources of knowledge, including: prevention, intervention, theory, cultural competency and evaluation in the applied lab activities.
Demonstrate, in alignment with the NASW or APA or ACA Standards for Cultural Competency, the introductory level knowledge, values and counseling skills necessary to work from a strengths perspective with diverse populations.
College Academic Learning Goal Designation: Critical Reasoning (CR), Diversity and Social Justice (DJ)
Prerequisites: ENG 100 and (PSY 140 or SWO 101).
3 Credits 3 Weekly Lecture Hours

SWO 210 Human Behavior and the Social Environment
This course focuses on the internal and external variables that influences 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-social 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. NOTE: 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 individual's 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.
Prerequisites: (SWO 101 or HUS 101) and 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 also be 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. NOTE: 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 a transfer advisor.
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 US.
Prerequisites: (SWO 101 or HUS 101) and ENG 100.
3 Credits 3 Weekly Lecture Hours

TCC - Technology Dept. Core

TCC 111 Technical Communications
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:
Demonstrate knowledge of and ability to use the current version of MS Office.
Effectively articulate technical procedures and other technical information.
Create, manage, store, and retrieve various forms of technical information using variety storage sources such as cloud based and web based systems.
Demonstrate strategies and methods for structuring an effective oral technical presentation.
Prepare written technical memos, reports and other professional documents.
College Academic Learning Goal Designation: Information Technology (TC)
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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 Lab Hours

TCC 121 Project Management Processes
This course introduces students to the basic principles of project management. It is designed to provide students with foundations in initiating, planning, executing, monitoring, and controlling various projects. Students learn the fundamentals of project management knowledge areas such as, scope, time, cost, quality, human resources, communications, risk, procurement, and stakeholder management. Project Management can be applied to fields of construction, skilled trades, manufacturing, engineering, architecture, and others.
Upon successful completion of this course, students should be able to:
Develop a process based rationale for approaching project management.
Demonstrate ability to define project objectives and goals.
Demonstrate knowledge of the principles of scope management, risk management, cost planning and control, resource capacity analysis and allocation, time management and project scheduling, as well as change management.
Demonstrate the ability to create a Project Charter and Preliminary Planning Steps in the Initiation phase, as indicated in the Project Management Book of Knowledge or PMBOX published by the Project Management Institute (PMI).
Prepare a Project Task List that indicates task name, beginning and end dates of a task, and the length of time it will be required to completed the task.
Utilize Microsoft Project software to compile data, perform analyses, and generate project documentation.
Simulate project meetings with meeting minutes on individual student projects.
Verify the operation of current version of MS Project and insure the ability to integrate with other Microsoft and Industry acceptable standard.
Prerequisites: TCC 111.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TCC 112.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Architectural Students Only Prerequisites: TCC 122, TDD 216 or TME 210 or ARC 221*. *Courses marked with a star make be taken concurrently.
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.
Prerequisites: TCC 122 and (TCC 216 or TME 210).
3 Credits 1 Weekly Lecture Hour
4 Weekly Lab 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. a.) Architectural/Site: Emphasis is placed on residential and light commercial architectural drawings, architectural symbols, drafting practices, use of scales, applied geometry and orthographic projection. b) Heating, Ventilation and Air Conditioning (HVAC): Emphasis is placed on drawings and schematics for various HVAC systems, HVAC symbols, load calculation introduction. c.) Electrical: Instruction on interpreting electrical power plans, lighting plans, panel schedules and single-line diagrams as well as common ANSI (American National Standards Institute) and IEC (International Electro-technical Commission) symbols. d.) Plumbing: Instruction on interpreting plumbing plans and riser drawings including isometric details and common plumbing symbols.
Upon successful completion of this course, students should be able to:
Demonstrate competencies in reading and interpreting architectural construction drawings (floor plans, elevations, details, symbols).
Discuss architectural, carpentry, mechanical, electrical and plumbing materials and construction practices.
Demonstrate competencies in reading and interpreting HVAC technical drawings (floor plans, details, symbols).
Demonstrate competencies in reading and interpreting plumbing technical drawings (floor plans, isometric details, symbols).
Demonstrate competencies in reading and interpreting electrical technical drawings (floor plans, line diagrams, symbols).
Prepare for advanced studies in the architectural and MEP (mechanical, electrical and plumbing) construction fields.
Review and discuss the purpose of specifications for all trades.
Create floor plans and orthographic drawings based on blueprints and isometric drawingsUse architectural and engineering scales as well as calculations in conjunction with blueprints to determine the MEP information necessary for construction.
Develop working drawings in each of the programs (Architectural, Carpentry, HVAC, Plumbing, Electrical, Construction Supervision, and CADD) Understand the various types of architectural and MEP reference sources and use them effectively.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TCS 105 Workplace Safety
This course is designed to provide students' with a general awareness on recognition, avoidance, abatement and prevention of safety and health hazards on a construction site. Topics covered in the class include fall protection, personal protective equipment, scaffolding, ladder safety, as well as safe and proper handling of tools and other construction equipment.
Upon successful completion of this course, students should be able to:
Demonstrate knowledge of worker rights that are protected under OSHA.
Demonstrate knowledge of the responsibilities an employer has under OSHA.
Demonstrate an understanding of general safety and health provisions.
Identify major fall, electrocution and other types of work hazards.
Demonstrate the use of personal protection equipment.
Identify major health hazards common to the construction industry.
Demonstrate workplace safety practices.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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.
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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 operationsExplain critical inputs to the process for construction planning and scheduling.
Monitor work progress Diagram the elementary work activities given for the jobTrack time duration information for activity completionOutline a logical order in which given work items must be doneDiscuss the elements of a sound job philosophy and the means for implementationCompare variations in type and elements of basic construction contractsDescribe standard procedures for quality control in materials and workmanshipDescribe standard procedures for handling changes, claims and disputesAdminister standard documents and procedures for construction project closeoutExplain the documents required to recommend/allocate the final phase of payment and waiver of liens
Prerequisites: (ENG 050 and REA 050) or ENG 099 or REA 075. Appropriate placement test scores may be accepted.
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.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: (MAT 110 or MAT 128) and TCS 100 and TCS 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.
Prerequisites: TCS 131.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TCS 141 Construction First Aid/Safety
Emergency first-aid and accident-prevention instruction for construction employees and managers. OSHA requirements are stressed in this course. Administrative aspects of recordkeeping requirements, rights and responsibilities, standards, safety program development and implementation are covered. Safety training includes identification and elimination of accident and health hazards, inspection techniques and administration of first-aid and CPR.
Upon successful completion of this course, students should be able to:
Describe the reasoning for accident prevention program development.
Identify the appropriate administrative requirements, as defined by OSHA, to effect an adequate accident prevention program.
Develop and implement an accident prevention program.
Administer first-aid/CPR or seek appropriate medical attention during a construction-related emergency.
3 Credits 3 Weekly Lecture Hours

TCS 190 Construction Management Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

TCS 194 Construction Management Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

TCS 199 Construction Management Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

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.
Prerequisites: (MAT 110 or MAT 128) and TCC 111.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Corequisites: TCC 122 or permission of instructor.
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.
Prerequisites: MAT 110 or MAT 128.
Corequisites: TCC 122.
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab Hours

TDD 190 CADD Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

TDD 194 CADD Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

TDD 199 CADD Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits 3 Weekly Lecture 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.
Prerequisites: (MAT 110 or MAT 128) and (PHY 100 or PHY 107) and TCC 112 and TME 231.
3 Credits 2 Weekly Lecture Hours
3 Weekly Lab 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.
Prerequisites: TCC 122.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Prerequisites: TDD 124, or architectural drafting course, or drafting experience.
Upon successful completion of this 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 microcomputer-based systems.
Prerequisites: TDD 124.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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 methology 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.
Prerequisites: TCC 122.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TEC - Technologies

TEC 280 Technical Study Assessment
This credit designation enables students to maximize the amount of credits they can earn for what they already know. College-designated subject matter experts evaluate the college-level knowledge and skills an individual has gained outside of the classroom for college credit. This evaluation is called Prior Learning Assessment (PLA). Prior Learning is learning gained in a variety of settings and through formal and non-formal means, including but not limited to: apprenticeship, workplace training, professional certifications, military training and service.
Upon successful completion of this course, students should be able to:
Identify college-level knowledge gained outside of classroom.
Assemble a portfolio for evaluation.
Identify career advancement and degree completion goals.
Create a professional Education Plan.
1-5 Credits

TEC 281 Technical Study Assessment
This credit designation enables students to maximize the amount of credits they can earn for what they already know. College-designated subject matter experts evaluate the college-level knowledge and skills an individual has gained outside of the classroom for college credit. This evaluation is called Prior Learning Assessment (PLA). Prior Learning is learning gained in a variety of settings and through formal and non-formal means, including but not limited to: apprenticeship, workplace training, professional certifications, military training and service.
Upon successful completion of this course, students should be able to:
Identify college-level knowledge gained outside of classroom.
Assemble a portifilio for evaluation.
Identify career advancement and degree completion goals.
Create a professional Education Plan.
1-5 Credits

TEC 282 Technical Study Assessment
This credit designation enables students to maximize the amount of credits they can earn for what they already know. College-designated subject matter experts evaluate the college-level knowledge and skills an individual has gained outside of the classroom for college credit. This evaluation is called Prior Learning Assessment (PLA). Prior Learning is learning gained in a variety of settings and through formal and non-formal means, including but not limited to: apprenticeship, workplace training, professional certifications, military training and service.
Upon successful completion of this course, students should be able to:
Identify college-level knowledge gained outside of classroom.
Assemble a portfolio for evaluation.
Identify career advancement and degree completion goals.
Create a professional Education Plan.
1-5 Credits

TEC 283 Technical Study Assessment
This credit designation enables students to maximize the amount of credits they can earn for what they already know. College-designated subject matter experts evaluate the college-level knowledge and skills an individual has gained outside of the classroom for college credit. This evaluation is called Prior Learning Assessment (PLA). Prior Learning is learning gained in a variety of settings and through formal and non-formal means, including but not limited to: apprenticeship, workplace training, professional certifications, military training and service.
Upon successful completion of this course, students should be able to:
Identify college-level knowledge gained outside of classroom.
Assemble a portfolio for evaluation.
Identify career advancement and degree completion goals.
Create a professional Education Plan.
1-5 Credits

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. NOTE: Prerequisites: An understanding of basic algebra.
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.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab Hours

TEL 102 A C Analysis
This course extends the basic concepts introduced in DC Analysis (TEL 101) to incorporate time-varying voltages and currents. AC (Alternating Current) circuit analysis introduces the basic behavior of capacitors and inductors, as well as series/parallel circuits. Students also learn to analyze Power (real, reactive, apparent) in various AC circuit configurations, including series/parallel resonance.
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 software simulators to obtain various currents and voltages in Rl, Rc, Rlc circuits.
Calculate reactive, apparent, and real power in single phase and multiphase circuits.
Analyze series and parallel resonant circuits.
Analyze transformer circuits.
Demonstrate knowledge of safety in the use of various test equipment.
Produce an accurate and neat laboratory report.
Prerequisites: TEL 101.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
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 amplifiercircuits.
Define the characteristics and application of field effect transistors.
Describe the properties and demonstrate the concepts of power supplies.
Prerequisites: TEL 101.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 101.
Corequisites: TEL 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 101.
Corequisites: TEL 121.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 124.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TEL 128 Computer System Electronics
The fundamentals of various components used in microcomputer systems and their hardware/software support are discussed. Methods of determining system faults at the system, unit, board and component levels are studied. Typical computer/digital systems and test equipment are introduced in the weekly laboratory session.
Upon successful completion of this course, students should be able to:
Diagnose and troubleshoot hardware and software problems.
Analyze signal flow at systems level.
Differentiate between software and hardware problems.
Construct hardware prototypes.
Generate software.
Perform system calibration and testing.
Interface various computer devices and accessories.
Prerequisites: TEL 126.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TEL 190 Electronics Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

TEL 194 Electronics Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

TEL 199 Electronics Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

TEL 200 Electro and 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.
Prerequisites: TEL 110.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 101 and TEL 110.
Corequisites: TEL 111.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 pre-requisite electronic courses will be applied to Troubleshooting and Repair.
Upon successful completion of this course, students should be able to:
Demonstrate a process for finding fault in electronic circuitsDemonstrate the techniques used to locate various faults in a basic guide amplifier systemDemonstrate the ability to solder and desolder components in a PC boardAnalyze and define the operation of a basic split DC power supplyUtilize the manufacturers' service manual for repair and adjustments for pioneer models SX-251R and PD-102Demonstrate the ability to repair a stereo receiver Pioneer Model Sx-251R and a CD player Pioneer Model PD-102.
Prerequisites: TEL 110.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 101.
Corequisites: CHE 106 or CHE 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.
Prerequisites: TEL 111 and TEL 121 and TEL 210 and MAT 210 and ENG 112.
Corequisites: TEL 261.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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 this 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.
Corequisites: TEL 260.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 260 and TEL 261.
Corequisites: TEL 263.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 260 and TEL 261.
Corequisites: 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, refactory 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 implementation, 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.
Prerequisites: TEL 260 and TEL 261 and TEL 262 and TEL 263.
Corequisites: TEL 265.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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 polymerarase 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.
Prerequisites: TEL 260 and TEL 261 and TEL 262 and TEL 263.
Corequisites: TEL 264.

3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: 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, 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.
Prerequisites: TEL 301.

4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TEL 301.

4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 ceramicsDetermine 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).
NOTE: Prerequisites: TME 111 or demonstratable precision measuring instrument familiarization (contact program coordinator).
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.
Prerequisites: TCC 111.
Corequisites: TCC 112 and (MAT 110 or MAT 128).
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TME 115 Basic Technical Skills
This course introduces students to the basic hands-on technical skills required for skilled trades, manufacturing and other advanced technology trades. Students receive instruction in use of hand and power tools, operation of equipment, use of English and Metric measurement instruments, use of precision measuring instruments, as well as, basic heating, bending and cutting.
Upon successful completion of this course, students should be able to:
Apply basic accident prevention practices and procedures relative to personal protection.
Interpret sketches, drawings and schematics, and perform basic layout practices.
Use English and Metric rules, weights and other instruments to make accurate measurements and layouts.
Perform basic electrical measurements.
Demonstrate the skills and knowledge required to utilize common hand and power tools.
Conduct basic heating, bending and cutting.
Demonstrate basic rigging and equipment moving procedures.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TME 190 Advanced Technologies Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

TME 194 Advanced Technologies Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credit for this experience. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years Have begun course work in their major (at least 9 credits) Have an overall grade point average (GPA) of 2.5 Obtain a written recommendation by a DCCC faculty within the discipline of the internship Submit a current resume to the Office of Student Employment Services
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

TME 199 Advanced Technologies Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Demonstrate specifically how job-related competence has improved.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits 3 Weekly Lecture Hours

TME 210 CNC Operation and Manual Programming
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 also be addressed. NOTE: Prerequisites: TME 111 or documentable and demonstratable proficiency, and competencies from appropriate work-life experiences (contact program coordinator).
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.
Prerequisites: TME 111.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TME 212 Computer Aided Machining
This course provides students with and 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 familizarion 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.
Prerequisites: TME 111.
Corequisites: TCC 112.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: (MAT 110 or MAT 128) and (PHY 100 or PHY 107).
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Recommended co-requisite: TME 229.
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.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TME 221 Manufacturing Proccesses 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.
Prerequisites: TME 121.
2,3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TME 212.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab 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. NOTE: Recommended concurrent: TME 220.
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.
Prerequisites: PHY 100 or PHY 107.
Corequisites: MAT 111 or MAT 120 or MAT 135 or MAT 151.
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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 ridged 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
Prerequisites: (MAT 110 or MAT 128) and (PHY 100 or PHY 107).
4 Credits 3 Weekly Lecture Hours
2 Weekly Lab 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.
Prerequisites: TME 220.
3 Credits 2 Weekly Lecture Hours
2 Weekly Lab Hours

TME 290 Fluid Mechanics
This course provides a study of the basic principles of industrial fluid mechanics and penuematics. Included are topics related to types of fluid and their use to transmit power throughout various circuits, together with pumps and compressors, circuit components, their application and control will be investigated. 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. Pilot and electromechanical control system features will be discussed and investigated. Instructional emphasis is placed on the relevant theoretical and practicial aspects of the subject matter.
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 systems operation.
Identify methods and criteria used to specify pneumatic prime movers, motors, pumps, valves, filters and strainers.
Identify, classify and specify hydraulic and pneumatic prime movers, motors, pumps, valves, filters and strainers.
Determine cylinder load and speed and calculate fluid 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 the more common pneumatic and hydraulic components.
Sketch simple circuits using standard graphic symbols.
Describe the function of basic fluidic devices, circuits and control systems.
Construct, demonstrate and investigate the use of various control devices, circuits and systems; to include pilot and electro/mechanical controls.
3 Credits 3 Weekly Lecture Hours

TSC - Trauma Studies

TSC 230 Recognizing Trauma
This course provides students with a foundation in understanding trauma. Multiple cross-cultural definitions of trauma will be considered. The course explores the causes of trauma, including but not limited to domestic and community violence, mass shootings, school shootings, war, sexual assault and harassment, child sexual abuse, physical abuse, neglect, accidents, natural disasters, suicide, and other traumatic loss. Students will understand the symptoms related to traumatic reactions, across physical, neurobiological, cognitive, behavioral, emotional, social, and developmental domains. Techniques for hypothetically assessing trauma will be explored. NOTE: Pre-Requisite: In addition to PSY 140, students must have completed at least one Trauma Studies program elective.
Upon successful completion of this course, students should be able to:
Define trauma through various cross-cultural perspectives.
Identify primary causes of trauma.
Recognize the symptoms associated with traumatic reactions.
Examine rates of different types of trauma and identify reliable sources for current data.
Develop a hypothetical plan for trauma assessment.
Demonstrate proficiency in accessing, interpreting, and communicating findings from trauma-related research.
Prerequisites: PSY 140.
3 Credits 3 Weekly Lecture Hours

TSC 236 Trauma Outcomes and Societal Response
This course provides students with an understanding of traumatic reactions to prepare professionals to respond to those suffering after a traumatic event compassionately and effectively, across clinical and non-clinical settings, so that interventions support prevention, resilience, and treatment. Common trauma outcomes will be discussed. Clinically, diagnosis and treatment options will be reviewed with an emphasis on crisis intervention and evidence-based treatments. Non-clinically, trauma-sensitive considerations and interventions will be discussed systemically, across families, communities, and the workplace. Legal and ethical issues surrounding trauma will be reviewed. The course will highlight protective and risk factors that increase/decrease traumatic reactions and review the experiences of posttraumatic growth and resiliency in the face of trauma. Students will understand the potential of shock, desensitization, burnout, vicarious trauma, and compassion fatigue among professionals and will be able to recognize the importance of professionals' self-care.
Upon successful completion of this course, students should be able to:
Recognize common trauma outcomes.
Identify clinical diagnostic options and evidence-based clinical prevention and intervention strategies.
Non-clinically, recognize trauma-sensitive considerations across systems and related legal and ethical issues.
Highlight protective and risk factors for trauma.
Relate traumatic reactions to posttraumatic growth and resiliency.
Recognize vicarious trauma and compassion fatigue and the importance of helpers' self-care.
Prerequisites: TSC 230.
3 Credits 3 Weekly Lecture Hours

WLD - Welding

WLD 100 Introduction to Welding
This course introduces students to the fundamentals of welding technology. Classroom instruction includes the proper selection of A.C and D.C. power sources and their applications. Oxy-fuel welding and cutting equipment and safety procedures are covered. Also discussed is proper set-up, use of GMAW and GTAW power sources and how to correctly set up and use them. All requirements and safety procedures are covered.
Upon successful completion of this course, students should be able to:
State the power sources associated with welding and their application.
Select the correct welding equipment for the job.
Set up and use oxy-fuel welding and cutting equipment.
Follow safety requirements and regulations.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 101 Introduction to Oxy-Fuel Welding and Cutting
This course introduces students to the basic techniques used in oxy-fuel welding and cutting operations. 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.
Demonstrate the safety practices within the work environment.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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.
Demonstrate an understanding of safety issues as they pertain to shop safety, occupational safety and personal safety.
Prerequisites: WLD 101.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 103 Shielded Metal Arc Welding I
This course is designed to enable student learn the fundamentals of Shield Metal Arc Welding. The 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.
Demonstrate job safety in the set-up and operation of arc welding equipment.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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. Students also learn to weld in horizontal, vertical and overhead positions.
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.
Demonstrate the proper handling and storage of electrodes.
Prerequisites: WLD 103.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 105 Intermediate Shielded Metal Arc Welding I
This course reviews the theories related to Shielded Metal Arc Welding. Students continue to learn and use the proper welding processes and procedures. 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.
Prerequisites: WLD 104.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 106 Intermediate Shielded Metal Arc Welding II
This course continues the theories covered in Intermediate SMAW 1. Students are taught how to weld typical joints in both flat and horizontal positions using various electrodes. Students are introduced to A.W.S., A.S.M.E. and A.P.I. Welding codes.
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.
Prerequisites: WLD 105.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 111 Printing Reading and Shop Math for Fabricators
This course provides the student with an introduction and review of basic mathematical concepts and applications required to accomplish standard fabrication functions. Students also learn to use common ruled measuring tools and scales in order to perform linear measurements. Students are taught how to locate, interpret and utilize information found in working drawings, blueprints and technical documents.
Upon successful completion of this course, students should be able to:
Perform mathematical calculations required to complete fabrication tasks.
Identify common measurement units in both English (US Convention) and Metric standards.
Demonstrate how to locate and utilize data on blueprints.
Interpret technical drawings, sketches, blueprints.
Demonstrate an understanding of the techniques and design-drafting practices used to create working drawings.
3 Credits 3 Weekly Lecture 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.
Demonstrate the layout of plate and sheet metals.
Demonstrate the use of fixtures and jigs for design purposes.
Identify and apply approved methods to control distortion.
Prerequisites: WLD 202 and WLD 205.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab 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 Lab Hours

WLD 152 Welding Codes and Specifications
This course is designed to assist students in understanding welding industry codes and specifications. Students also learn to properly apply the codes and specifications.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of welding codes and their use.
Use welding specifications.
Apply proper use of API, AWS, and ASME codes.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 153 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.
Explain the weldability of commercial alloys.
Describe the function of fluxes in making proper liquid-solid paased bonded joints.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 190 Welding Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

WLD 194 Welding Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

WLD 199 Welding Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

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 Lab Hours

WLD 201 Gas Metal Arc II
This course covers the application of gas metal arc welding theory to non-ferrous materials and their alloys. Different modes of metal transfer are addressed.
Upon successful completion of this course, students should be able to:
Show proper GMAW equipment set-up.
Demonstrate threading GMAW wire.
State how to set appropriate gas flow rate and current.
Describe the various methods of metal transfer.
Explain the effect of slope and inductance in gas metal arc welding.
Perform welds in all positions using the short-circuiting metal transfer method.
Weld in the IF, 2F and IG positions using the globular metal transfer method.
Perform welds in the IF and IG positions using the axial spray metal transfer method.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 202 Advanced Shielded Arc Welding 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.W.S. 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 AWS numbering system.
Work with ASME, ASTM and API codes.
Weld with E6010 on heavy plate in all positions.
Prerequisites: WLD 106.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 203 Advanced Shielded Arc Welding 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 this course, students should be able to:
Weld in all positions using a variety of electrodes.
Weld in accordance with AWS, ASME, ASTM and API specifications.
Interpret welding blueprints.
Interpret technical information used on industrial working and assembly drawings.
Perform non-destructive testing procedures.
Prerequisites: WLD 202.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 204 Gas Tungsten Arc Welding 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.
Prerequisites: WLD 106.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 205 Gas Tungsten Arc Welding 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.
Prerequisites: WLD 204.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours