COURSE DESCRIPTIONS
ACCOUNTING (ACCTG)

151 Accounting Principles 4 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and completion of, or co-register in BSMTH 101, MATH 092, MATH 119, MATH 124, MATH 150 or higher, or achieve a score on the COMPASS or ACT which satisfies current college general education requirements for graduation.

This course reviews the fundamental accounting process studied in the principles of accounting and continues with a more comprehensive study of the major categories of the balance sheet and statement of cash flow and income statements. Students will also be introduced to the applicable FASB pronouncements and related topics.

152 Accounting Principles 4 Credit Hours
Prerequisite: ACCTG 151

This course is a continuation of Accounting 151. The concepts and principles of corporate accounting, introduction to manufacturing and cost accounting, management analysis and interpretation of financial data are covered in this course.

201 Microcomputer Accounting I 3 Credit Hours
Prerequisite: ACCTG 151 and CIS 109

This course is an introduction to computerized accounting emphasizing the application of accounting principles to microcomputers. Microcomputers will be used to maintain general and subsidiary ledgers.

205 Microcomputer Accounting II 3 Credit Hours
Prerequisite: ACCTG 152 and ACCTG 201

This course is a continuation of Microcomputer Accounting I. Using a software package, students will review and apply basic accounting principles, record transactions and generate computer documents for various types of business organizations.

220 Payroll Accounting 3 Credit Hours
Prerequisite: ACCTG 151

This course covers the analysis and recording of payroll transactions and the filing requirements of payroll reports. It will also focus on the various phases of Social Security taxes, federal income taxes, state income taxes and unemployment compensation and the laws relating to them. A payroll project is required, during which students will apply analytical and procedural skills learned in this course.

251 Intermediate Accounting I 4 Credit Hours
Prerequisite: ACCTG 152

This course reviews the fundamental accounting process studied in the principles of accounting and continues with a more comprehensive study of the major categories of the balance sheet and statement of cash flow and income statements. Students will also be introduced to the applicable FASB pronouncements and related topics.

252 Cost Accounting 4 Credit Hours
Prerequisite: ACCTG 152

This course is an introductory course designed to provide practical knowledge of cost accounting systems and procedures. The course begins with an overview of the nature and purpose of cost accounting and follows with the basic concept that cost flow matches work flow. The major areas of cost accounting are covered, including job order cost accounting, process cost accounting, budgeting, standard costs, direct costing and nonmanufacturing costs.

254 Intermediate Accounting II 4 Credit Hours
Prerequisite: ACCTG 251

This course continues ACCTG 251 with a comprehensive study of the major categories of the balance sheet, statement of cash flow, and income. In addition, students will be introduced to the accounting, analysis, and reporting of special topics such as earnings per share, investments, deferred taxes, and revenue recognition. Students will also be introduced to the applicable FASB pronouncements and related topics.

255 Introduction to Taxation 3 Credit Hours
Prerequisite: ACCTG 151

This course deals with the broad concepts of taxation. Topics include a working definition of taxation and tax bases. Tax concepts for both individual and corporate taxation are covered. Since income tax laws are constantly changing, this course is not designed to teach individuals how to be tax accountants or prepare individual income tax returns. The emphasis will be on broad, general concepts and on such topics as gross income deduction, credits and payments, expenses, capital gains and tax planning.

ADMINISTRATIVE PROFESSIONAL (ADMN)

101 Introduction to Today's Office 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This introductory course provides an overview of the administrative professional program. Content includes communication techniques and use of resources. Proofreading, spelling, grammar and punctuation skills are emphasized.

102 Keyboarding 1 Credit Hour
Prerequisite: Minimum test competencies in Reading

Keyboarding is designed to teach touch operation of the computer keyboard. The purpose of the course is to enable students to input and access information accurately and efficiently. Note: Students who have received credits for ADMN 131, 135 or WPR 103 will not receive credit for this course. This class may not be taken concurrently with any of the above courses.
Administrative Management Activities.

Presentation software programs. The course also includes organizing, sorting, managing and presenting information with word processing, spreadsheet, database and current office suite software packages. The course includes Integrated Office Software provides instruction in the use of memos, tables, and manuscripts.

Intermediate Keyboarding is taught with word processing-building speed and accuracy. Content includes keying letters, memos and reports.

This course teaches the touch method of computer keyboard operation and provides practice techniques for completing 15-second, 30-second, and one- and two-minute timings which enforce that letter. This is a self-paced course in the Regional Computer Technology Center and the Business Learning Lab using a Web site specifically created for skill building.

Intermediate Keyboarding is taught with word processing-like software. The course includes the development of speed and accuracy and the production of business letters, memos, tables, and manuscripts.

Integrated Office Software provides instruction in the use of current office suite software packages. The course includes simulation exercises designed to develop proficiency in organizing, sorting, managing and presenting information with word processing, spreadsheet, database and presentation software programs. The course also includes complex, hands-on projects that represent day-to-day administrative management activities.

ANTHROPOLOGY (ANTHR)

Introduction to Cultural Anthropology

This course is designed to provide a thorough introduction to the history, methods and theories of archaeology. Emphasis will be on a North American perspective, although examples of archaeological research/reasoning from around the world will be discussed, as appropriate. Case studies will be employed to illustrate major trends or concepts. Lectures, demonstrations, slide shows and hands-on experiences and exercises will be used to facilitate the learning experience.

Archaeological Field Methods introduces the theory and methodology of fieldwork to Monroe County Community College students. Students spend the majority of this class out-of-doors engaging in hands-on activity while working on actual archaeological sites. As such, students experience the excitement and hard work that goes into recovering artifacts and other archaeological material. Students will learn how archaeologists plan and conduct research, learn proper excavation and recording methods, and learn how to identify artifacts. As importantly, you will recognize the social aspects of archaeology, including the value of individual work and self-discipline as well as the value of teamwork. When finished with the class, students will have a basic yet thorough knowledge of archaeological fieldwork techniques and will be prepared for more advanced study.
ART (ART)

151 Art Fundamentals 3 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This is an introductory course for all students, especially those who are interested in taking a basic art class. The student will be exposed to the elements of two-dimensional form structure, the principles of organization, art terminology, materials and techniques and forms of artistic expression.

155 Art Appreciation 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W, Sp
The student will be exposed to the fundamental principles governing art in its various forms. Slide lectures, class discussions, presentations by visiting artists, films and studio projects are designed to meet the needs of general students in understanding and appreciating the fine and applied arts. This course is a satisfactory course for the Global Studies Degree Designation.

158 Art for Elementary Teachers 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W, Sp
This course is designed for the student who is pursuing a career in elementary education. It will focus on the various strategies that are required to produce a qualitative art program at the primary grade levels. Emphasis will be placed on teaching art production, writing instructional objectives for lesson planning and reviewing the fundamentals of art.

160 Two-Dimensional Design 3 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, Sp
This course studies the principles of two-dimensional design for an understanding of its nature and expressive possibilities. It allows for the opportunity to develop a creative approach in working with its elements. Emphasis will be placed on developing an awareness of composition and the principles of organization involving creativity and intuition. This course is viewed as a continuation of Art Fundamentals.

165 Illustration Techniques 3 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course introduces the art student to the many drawing and painting techniques used by professional illustrators. The student will simulate the demands and deadlines faced in the advertising world. The exploration of ideas and images, recognition, media selection, step-by-step work-ups and presentation of final work is of utmost importance and will be developed thoroughly by the student. This course is viewed as a continuation of ART 160.

170 Life Drawing 3 Credit Hours
6 Billable Contact Hours
Prerequisite: ART 151 or ART 180
F, W
This is an introductory course in drawing the human figure from a live model. Numerous approaches, including varied media and drawing techniques, as well as the examination of human anatomy and its structure, will be discussed and explored. Understanding of the various attitudes of the human form will be emphasized.

180 Drawing I 3 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This is a comprehensive course covering the mechanics and techniques of drawing. The student will become aware of the various dry media used in drawing. Concentration on expressive line quality, mass, value, proportion and visual awareness will be of primary concern.

181 Drawing II 3 Credit Hours
6 Billable Contact Hours
Prerequisite: ART 180
F, W
In this course, mixed media, self-expression, draftsmanship, composition, content and subject awareness will be emphasized. The student will be placed in a situation where self-discipline, analysis of composition and the development of creative imagery are of the utmost importance. This course is a continuation of ART 180.

190 Painting I 3 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This is an introductory course in painting. The selection of subject, composition, investigation of the many techniques (glazing, scumbling, dry brush, wet on wet, impasto, etc.) and preparation of painting surfaces will be explored thoroughly. Acrylic paint will be the media of choice in this class.

191 Painting II 3 Credit Hours
6 Billable Contact Hours
Prerequisite: ART 190
F, W
Emphasis is placed upon individual problems and the further development of techniques and approaches gained in Painting I. This course is a continuation of ART 190.

250 Watercolor Painting I 3 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This is an introductory course designed to familiarize the beginning student with the many technical and creative approaches to watercolor painting. Investigation of papers and watercolor tools, exploration of the medium, demonstrations, slide lectures and critiques will give the student in this class a more than adequate understanding of watercolor media.

251 Watercolor Painting II 3 Credit Hours
6 Billable Contact Hours
Prerequisite: ART 250
F, W
Emphasis will be on composition and individual expression. This course is a continuation of ART 250.
252 Studio Art 3 Credit Hours 6 Billable Contact Hours
Prerequisite: ART 181 or ART 191 or ART 251 F, W
Studio Art is a non-transferable course for the student/artist who has completed all the art offerings in a given discipline but still wishes to utilize the studio space, facilities and instructor's expertise to gain further knowledge. This will be done with the permission and under the supervision of an instructor. The student receives "P" or "F" rather than a letter grade for the course since it is not intended to transfer.

270 Ceramics I 3 Credit Hours 6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W
This course introduces the student to the nature of clay and how it can be formed. An emphasis will be placed on hand-building methods; coil and slab methods will also be investigated. The intent of the course is to develop techniques of the artist/craftsman in each student. Fundamentals of design and glazing are also covered.

271 Ceramics II 3 Credit Hours 6 Billable Contact Hours
Prerequisite: ART 270 F, W
This course continues the study of clay and the methods of using it as an art form. The objectives will be to develop one's skill in wheel throwing and to increase the student's awareness of the aesthetic nature of good ceramics. This course is a continuation of ART 270.

272 Ceramics III 3 Credit Hours 6 Billable Contact Hours
Prerequisite: ART 271 F, W
This course continues the study of clay and the methods of using it as an art form. The objectives will be to increase one's skill in wheel throwing, analyze and to make more complicated forms, experiment in combining techniques and increase the student's awareness of the aesthetic nature of good ceramics. This course is a continuation of ART 271.

273 Ceramics IV 3 Credit Hours 6 Billable Contact Hours
Prerequisite: ART 272 F, W
This course emphasizes self-expression, craftsmanship and studio practices. Glaze calculations and kiln firing procedures will also be covered. This course is a continuation of ART 272.

274 Studio Practices Ceramics 3 Credit Hours 6 Billable Contact Hours
Prerequisite: ART 273 F, W
This is a non-transferable course for the artist who has completed all the art offerings in a given field but still wishes to use the studio space and instructor's expertise to gain further knowledge. This will be done with the permission and under the supervision of an instructor. The course is not designed as part of a transfer program. The student receives "P" or "F" rather than a letter grade.

280 Art History: Prehistoric to Gothic 3 Credit Hours 6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W
This course examines the art of the ancient western world beginning with pre-historic man and concluding with the Medieval Gothic Era. The periods covered include pre-historic, Mesopotamian, Egyptian, Greek, Roman, early Christian, Byzantine and Gothic. This course is a satisfier course for the Global Studies Degree Designation.

281 Art History: Renaissance to Baroque 3 Credit Hours 6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W
This course is an exploration of the artists and ideals that mark the development of early Renaissance art and its subsequent developments in Northern and Southern European art to the eighteenth century. Focus will be placed on the individual artists from the early Renaissance period up to the Baroque. This course is a satisfier course for the Global Studies Degree Designation.

282 Art History: Neo-Classical/ Early Modern 3 Credit Hours 6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W
This course traces the early movements of modern art, showing the progression of thought and the change of styles from the Neo-Classical period through the early twentieth century. Focus will be placed on specific artists who had leading roles in these developments. This course is a satisfier course for the Global Studies Degree Designation.

ASTRONOMY (ASTRN)

151 Introduction to Astronomy 4 Credit Hours 4 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests
This course is a non-mathematical introduction to the principles of the astronomical universe. It is a general education course designed to be of interest to the individual without a scientific background who wishes to study the interrelationship of the parts of the universe. Major areas of study include historical overviews, stars, stellar evolution, galaxies, cosmology and the solar system. Some laboratory work and day/evening outside observing may be required.

AUTOMOTIVE ENGINEERING TECHNOLOGY (AUTO)

101 Internal Combustion Engines 4 Credit Hours 4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests F
This course covers the operating principles and design considerations of internal combustion engines typically encountered in the transportation field. Included will be two and four stroke-cycle gasoline and diesel engines, the Wankel and gas turbine engines. Emphasis will be on four stroke-cycle gasoline engines.
102 Automotive Electricity 4 Credit Hours
Prerequisite: ELEC 125
6 Billable Contact Hours
W

The practical application of electrical principles will be studied and include theory of operation, design and troubleshooting of starting motors, alternators, regulators and the complex electrical accessories found on modern automobiles. Use of automotive electrical test equipment will be stressed.

103 Fuel & Emission Control Systems 4 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
W

This course covers the design theory, construction, operation and maintenance of fuel pumps, fuel injection and emission control systems. Principles of fuel distribution, manifolds and carburetors are studied. Students will develop skills in the use of diagnostic equipment to test and calibrate fuel and emission control systems.

104 Automotive Ignition Systems 3 Credit Hours
Prerequisite: ELEC 125
F

This course covers the operating principles of electronic and computer controlled ignition systems. Dynamometers are used to determine ignition timing curves for various operating conditions. Diagnostic procedures and the use of testing equipment will be stressed.

105 Automotive Transmissions 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
W

This course covers the construction, operation and maintenance of standard and automatic transmissions and overdrive units. Troubleshooting, adjustment and maintenance of the various transmissions is covered in detail.

107 Automotive Chassis Units 4 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
F

This course covers the design theory, construction, operation and maintenance of basic chassis components. Differentials, propeller shafts, springs, suspension, alignment and brake systems are studied. Use of road simulators with accelerometers and load cells are used to study vehicle dynamics.

109 Welding for Automotive Technicians 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS test
F

This course is an in-depth introduction to the technical concepts pertaining to the more common automotive welding and cutting processes. Machine functions and filler metal chemistry will be emphasized as well as procedure requirements for stainless steel and aluminum. Welding/cutting processes covered (including laboratory applications) include: oxy-fuel cutting (OFC), plasma arc cutting (PAC), gas tungsten arc welding (GTAW) and gas metal arc welding (GMAW).

114 Auto Instrumentation and Testing 4 Credit Hours
Prerequisite: AUTO 101 and AUTO 103 and AUTO 104
6 Billable Contact Hours
W

This course is designed to further develop students’ understanding and ability to set up and conduct laboratory investigations applicable to automotive research and development. Emphasis will be placed on defining the scope of a project, evaluation of investigation procedures, setting up and conducting tests, gathering and analyzing data and the production of final reports. Hardware and procedures will include computerized data collection, application of thermocouples, pressure transducers, strain gauges and similar devices applied to components undergoing tests on chassis and engine dynamometers, flow benches and related equipment.

201 Automotive Digital Electronics 3 Credit Hours
Prerequisite: ELEC 125
4 Billable Contact Hours
W, Sp

An introduction to digital theory, components, circuitry and systems as they relate to automotive applications. Topics covered are: basic microprocessor theory, the address bus, the data bus, control lines, memory, output systems, input systems, inherent instructions, extended instructions and applications.

BIOLOGY (BIOL)

151 Biological Sciences I 4 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests
6 Billable Contact Hours
F, W, Sp

General Biology is designed to cover selected biological topics that should help the student gain an understanding and appreciation of basic life functions, man's relationship to the environment, and the application of biological data to effective decision making. The class includes units of modern cell biology, chemistry, metabolism, genetics, evolution and ecology. This is the first semester of a two-semester sequence. Course requires laboratory work.

153 Biological Sciences II 4 Credit Hours
Prerequisite: BIOL 151
6 Billable Contact Hours
W

General Biology is designed to cover selected biological topics which should help the student gain understanding and appreciation of basic life functions, man's relationship to the environment and the application of biological data to effective decision making. The class will cover plant and animal anatomy, physiology and diversity. This is the second semester of a two-semester sequence. Course requires laboratory work. Dissection of preserved animal specimens is required.
156 Introduction to Environmental Science  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests  
F, W  
An introduction to environmental science stressing fundamental concepts and principles of ecology, ecosystem structure and function, population dynamics, resources and pollution. This course reflects applications of physical, chemical, biological and geological principles to define ecological change, both natural and anthropogenic. Topics include land use, food resources, mineral resources, energy, air, water and the causative interrelationships between human values and socio-economic, political, and environmental problems. Course requires laboratory work. This course is open to both science- and non-science majors.

157 Anatomy & Physiology I  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: BIOL 151 or admission into the Associate Degree Nursing (ADN) program  
Fundamental concepts of cellular structure and human body organization. Emphasis on cellular structure and function, and anatomy and physiology of the following human organ systems: integumentary, skeletal, muscular, nervous and special senses. Integrated principles of chemistry, biology and embryology are covered. This course is required for all students in the Health Sciences curriculum. Course requires laboratory work. Dissection of preserved animal specimens is required.

158 Anatomy & Physiology II  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: BIOL 157  
A continuation of Biology 157, this course covers the anatomy and physiology of the human endocrine, circulatory, respiratory, digestive, renal and reproductive systems. This course is required for all students in the Health Sciences curriculum. Course requires laboratory work. Dissection of preserved animal specimens is required.

251 Elements of Botany  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: BIOL 151  
A detailed study of plant forms from the primitive groups to the higher seed plants. Morphology and physiology, taxonomy, evolution, ecology and economics will be studied. Course requires laboratory work.

252 Elements of Zoology  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: BIOL 151  
A detailed study of invertebrate and vertebrate animals. Emphasis is placed on morphology and physiology, taxonomy, evolution, economics and ecology. Some of the more important cases under these topics will be discussed and explored. This course requires field work outside of the normal laboratory hours throughout the semester. Dissection of preserved animal specimens is required.

259 Introduction to Pathophysiology  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: BIOL 158 and BIOL 260  
F, W  
A study of the fundamental mechanisms and manifestations of disease. The course covers basic principles of human pathophysiology, including infectious disease, immunopathology, congenital and hereditary disorders and neoplasia. Disorders of the major organ systems are emphasized: cardiovascular, respiratory, nervous, endocrine, renal, urologic and gastrointestinal/biliary pathophysiology. This course is designed for students in occupational programs relating to the health sciences.

260 General Microbiology  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: BIOL 151 or admission into the Associate Degree Nursing (ADN) program  
This is an introductory microbiology course designed according to the American Society for Microbiology Curriculum Guidelines for Undergraduate Microbiology. The course specifically teaches core competencies essential to an introductory microbiology course, including fundamental skills used in a microbiology laboratory. This course also includes topics that are of particular significance to allied health majors. Course requires laboratory work.

264 Fundamentals of Genetics  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: BIOL 151  
This course provides an introduction to the principles of the transmission of inherited characteristics and the underlying molecular mechanisms of the regulation of expression of genetic information. Topics will include: classical genetics, molecular genetics, biotechnology and genetic engineering, genetics of cancer and population genetics.

BUSINESS ADMINISTRATION (BUSAD)

151 Introduction to Business  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  
F, W  
This course surveys the field of business, focusing on problems, practices and procedures. The scope includes environmental aspects, organization, marketing and sales promotion, production, personnel, labor relations and finance. This course is required by most business curricula and should be taken in the first year. This course is also highly recommended for any non-business major who wishes to explore the field of business.
170 Small Business and Entrepreneurship 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course introduces students to small business and entrepreneurship. It is designed for students interested in starting or working for a small business, those interested in freelance or private contracting work (artists, caterers, daycare operators, welders, electricians, photographers, etc), business majors, and others interested in small business and entrepreneurship. Course topics include funding a business, developing a business plan, franchising, hiring and managing employees, marketing, personal selling, and ethics. The focus of this course is on the types of small businesses that students might actually start versus high-growth businesses reliant on venture capital. It covers practical aspects of small business management, including part-time businesses, Internet businesses, and the unique challenges and opportunities presented by family-owned businesses. Recognizing that entrepreneurs may start multiple businesses over the course of a lifetime, this course covers the entire business life-cycle from business idea formulation and evaluation to harvesting or closing a business.

BUSINESS LAW (BSLW)

251 Business Law 4 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course addresses various legal principles: law of contracts, agency, negotiable instruments and banking. Some of the more important cases under these topics will be discussed and explored.

BUSINESS MANAGEMENT (BMGT)

160 Managing in the Digital Enterprise 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course provides students with the skills and knowledge to work in and understand the challenges managers face in an increasingly digital world. The course includes an introduction to managing activities in the digital enterprise, including how the work of managers has changed as more employees and customers migrate to online. The hands-on portion of the course will include suite software, e-commerce, digital communications, including mobile devices, the Internet, email, and other networked resources used to turn data into commercial information. Keyboarding skills will be beneficial.

201 Principles of Management 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course emphasizes the basic principles of management. The course topics include functions of management, decision-making, leading, communicating, controlling, planning, human resources and organizing. Managerial functions are discussed within the framework of contemporary business organizations.

202 Business Communication in a Digital Age 3 Credit Hours
Prerequisite: ENGL 151 and one of the following: BUSAD 151, BMGT 160, BMGT 201 or ENGL 102
This course covers the principles, practices, ethics, and management of communication in a business environment, with an emphasis on both traditional and emerging media. Students will learn effective methods for planning, creating, transmitting, and managing information for a variety of purposes, and they will develop an understanding of the effective use of digital communication tools like social media and web sites. Students will also study strategies for managing a business’ presence on the Internet.

220 International Business 3 Credit Hours
Prerequisite: BMGT 201 and ECON 251
International Business introduces the process of globalization and its implications for business firms and their managers. Course content includes the social, political and economic environments of the multinational firm, with emphasis on management strategies across cultural and national boundaries.

251 Human Resource Management 4 Credit Hours
Prerequisite: BUSAD 151 or BMGT 201
The focus of this course is on business organization and management as they apply to the personnel functions of recruitment, selection, placement, orientation and training. Attention is given to job analysis and evaluation, morale measurement and maintenance, union-management relationships and employees’ economic and physical security.

BUSINESS MATH (BSMTH)

101 Business Mathematics 3 Credit Hours
Prerequisite: RDG 090 and MATH 090 or qualifying scores on COMPASS or ACT tests
This course covers practical application of addition, subtraction, multiplication, division, decimals, fractions, percentages, discounts, simple interest, compound interest, present value, discounting notes, interest on installment loans and amortized mortgage loans to the problems of everyday business and accounting.

141 Mathematics for Business and Finance 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 092 or qualifying scores on ACT or COMPASS tests
Concurrent enrollment in CIS 130 or BMGT 160
This course covers business mathematics emphasizing applications to problems in accounting and finance. The course includes algebra in business mathematics, mathematics of finance using formulas, exponents, and graphical expression and analysis. Also included are linear equations, ratio, proportion, percent, simple and compound interest, bank discount, simple and compound discount, basic marketing mathematics, annuities and amortization schedules. Financial calculators and spreadsheet software are integral to the course.
CERTIFIED NURSE AIDE (CNA)

100 Certified Nurse Aide 5 Credit Hours
8 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests
F, W, Sp, Su
This course is designed to prepare an individual to fulfill the role of direct caregiver/nursing aide. The course emphasizes the skills and behaviors that are significant to employers of nurse aides, including cardiopulmonary resuscitation. This course includes classroom activities, skills practice time in the laboratory, and supervised clinical practice at a long-term care facility. Written assignments and tests (both written and performance testing) are a part of this course. Upon completion of this course, students will be eligible to take the clinical and written exams required for certification as a nurse’s aide.

CHEMISTRY (CHEM)

150 Fundamental Principles of Chemistry 4 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 124 or MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests
An introduction to the fundamental concepts and applications of general chemistry and description of chemical compounds. Detailed discussions include: measurement, atomic structure, nuclear change, the periodic law, bonding, nomenclature, chemical reactions, mass relationships, solutions, acids and bases and other selected topics. The course is designed for majors in health, elementary education and technical programs and as an elective for non-science majors. Course requires laboratory work.

151 General College Chemistry I 4 Credit Hours
6 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS test and CHEM 150 or one year of high school chemistry
F
A study of the basic principles of general chemistry including classification and characterization of chemical particles, chemical bonding and molecular structure, chemical reactions, oxidation-reduction processes, reaction stoichiometry, inorganic nomenclature and the qualitative behavior of common metals and their cations. Course requires laboratory work.

152 General College Chemistry II 4 Credit Hours
6 Billable Contact Hours
Prerequisite: CHEM 151
W
A continuation of Chemistry 151 which includes obtaining and applying quantitative information in the laboratory to the basic interrelationships among solution chemistry, chemical thermodynamics, chemical kinetics, chemical equilibria and electrochemistry. Course requires laboratory work.

160 Fundamentals of Health-Science Chemistry 4 Credit Hours
6 Billable Contact Hours
Prerequisite: CHEM 150 or CHEM 151
W
A study of organic and biochemistry as it applies to the health sciences. The course is designed for majors in occupational programs relating to the health sciences that require a basic understanding of organic and biochemistry. Course requires laboratory work.

251 Organic Chemistry I 4 Credit Hours
6 Billable Contact Hours
Prerequisite: CHEM 152
F
The preparation, properties, structures and reactions of aliphatics, alcohols, ethers, aldehydes, ketones and carboxylic acids. Laboratory develops basic organic chemistry techniques as well as instrumental methods, including chromatography and spectroscopy. The course includes three hours of lecture and three hours of laboratory each week.

252 Organic Chemistry II 4 Credit Hours
6 Billable Contact Hours
Prerequisite: CHEM 251
W
A continuation of Chemistry 251 with consideration of enols, polyenes, amines, heterocyclics, carbohydrates, amino acids and macromolecular species. Laboratory develops basic organic chemistry techniques as well as instrumental methods, including chromatography and spectroscopy. The course includes three hours of lecture and three hours of laboratory each week.

COLLEGE SUCCESS SKILLS (COLL)

145 College Skills 2 Credit Hours
2 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
This course is recommended for beginning college students seeking study skills for academic success. The instruction provides skills for students to use for achieving classroom excellence and independent learning, including textbook mastery and lecture synthesis. Special emphasis includes study applications in critical thinking. The Humanities Division offers this course in order to assist students in achieving academic goals efficiently. Although skills for effective communication during class meetings are included, the general education skill emphasized in this course is critical thinking.

COMMUNICATIONS (COMM)

151 Introduction to Mass Media 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
Formerly called Intro to Radio & TV, this course is designed to introduce students to the mass media in all their forms, from print to broadcast and the Internet. It covers media effects, the roles and influence of mass media in society, and the various forms of media messages, from news to entertainment, public relations and advertising. It introduces students to key issues in media law, governance and ethics, and gives them a chance for hands-on contact with a newspaper newsroom and radio and TV studios.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Charge Hours</th>
<th>Prerequisite:</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>109</td>
<td>Spreadsheet Software</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>This course familiarizes students with computer information systems. The course includes both computer concepts and hands-on use of various computer applications. Computer concepts include computer system basics of hardware, software, files and data storage. The hands-on portion consists of using the operating system, spreadsheets, word processing, databases, presentation software, e-mail and the Internet.</td>
</tr>
<tr>
<td>112</td>
<td>Database Software</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>This course familiarizes students with computer information systems. The course includes both computer concepts and hands-on use of various computer applications. Computer concepts include computer system basics of hardware, software, files and data storage. The hands-on portion consists of using the operating system, spreadsheets, word processing, databases, presentation software, e-mail and the Internet.</td>
</tr>
<tr>
<td>118</td>
<td>Windows Operating System</td>
<td>1</td>
<td>1</td>
<td>RDG 090 or qualifying scores on ACT or COMPASS tests</td>
<td>This course will focus on the Windows operating environment. Topics include working with files and folders, customizing the Windows environment, managing programs, using Windows accessories and utility programs, transferring data between applications, managing printing options and performing disk maintenance.</td>
</tr>
<tr>
<td>123</td>
<td>PowerPoint Presentation Software</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>The student will learn to transform data into professional presentations using a sophisticated PC-based software package. The course will start with simple presentations moving to the more complex projects involving animation and sound. Students will create and design charts, graphs and other visual elements which will be integrated with text to effectively communicate ideas.</td>
</tr>
<tr>
<td>130</td>
<td>Introduction to Computer Information Systems</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>This course provides students with basic knowledge of computer information systems. This course includes both computer concepts and hands-on use of various computer applications. Computer concepts include computer system basics of hardware, software, files and data storage. The hands-on portion consists of using the operating system, spreadsheets, word processing, databases, presentation software, e-mail and the Internet.</td>
</tr>
<tr>
<td>132</td>
<td>Computer Programming Concepts</td>
<td>3</td>
<td>3</td>
<td>BSMTH 101 or MATH 092 or qualifying score on ACT or COMPASS tests</td>
<td>This course provides an introduction to computer programming design and the coding of computer programs. Students will design solutions to computer problems using pseudocode, flowchart symbols and hierarchy charts. These solutions will then be coded, executed and debugged.</td>
</tr>
<tr>
<td>140</td>
<td>Help Desk Concepts</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>This course covers help desk technology, tools, techniques and customer service skills that are essential to any effective help desk. In this course, students are introduced to the service concepts of “soft skills” and “self-management skills” as well as the operation of a help desk and possible career paths.</td>
</tr>
<tr>
<td>150</td>
<td>Computer Science I</td>
<td>4</td>
<td>4</td>
<td>BSMTH 101 or MATH 092 or higher or qualifying score on ACT or COMPASS tests</td>
<td>This course focuses on the design stage of computer program development and coding of programs using an object-oriented programming language such as C++. Students will design solutions to a variety of computer problems. Documentation will be created using standard methods. Program solutions will be coded, executed and tested.</td>
</tr>
<tr>
<td>152</td>
<td>Visual Basic Programming</td>
<td>3</td>
<td>3</td>
<td>CIS 132</td>
<td>This course uses VISUAL BASIC to develop Windows applications. Utilizing microcomputers, students will design, build, run, save, modify and debug VISUAL BASIC applications using VISUAL BASIC interfaces, tools, forms, controls, properties and code.</td>
</tr>
<tr>
<td>153</td>
<td>Desktop App Development</td>
<td>3</td>
<td>3</td>
<td>CIS 150</td>
<td>This course focuses on the development of computer applications (apps) that feature controls and user interface elements required by today's desktop environments. Students will utilize the C# language in an integrated development environment (IDE) and other tools to design, document, implement and test a variety of desktop apps.</td>
</tr>
<tr>
<td>155</td>
<td>Database Management</td>
<td>3</td>
<td>3</td>
<td>CIS 112</td>
<td>This course covers the process of database design, development, implementation and management. Topics covered include relational database model, object-oriented database model, structured query language, entity relationships, normalization, database life cycle and distributed database management systems.</td>
</tr>
</tbody>
</table>
167 Discrete Structures 4 Credit Hours
Prerequisite: MATH 159 or MATH 164 or MATH 171
Corequisite: CIS 250. Must be successfully completed prior to or concurrently.

This course covers mathematical principles and techniques required for analysis, proofs and general understanding of algorithms used in computer science. Topics include: algorithms, advanced counting, sets, Boolean algebra, graphs, trees, functions, mathematical induction and understanding and doing proofs.

170 Web Design for Non-Designers 3 Credit Hours
Prerequisite: CIS 130 or MDTC 160 or WPR 102

This course covers basic skills and concepts in Dreamweaver, Flash, and Photoshop. This course is designed for students in disciplines outside of MCC's Graphic and Web Design programs who desire and/or need skills in multiple web software applications for the purposes of creating and editing graphic content for and adding content to an existing Web site. Examples of such disciplines include but are not limited to journalism and the Administrative Professional degree program.

172 Web Design Concepts 3 Credit Hours
Prerequisite: CIS 130

This course covers the fundamentals of designing informative, attractive and efficient Web pages. It includes issues of design techniques, browsers and computing platforms, typography, color selection, navigation and storyboarding.

174 Dreamweaver Web Design 3 Credit Hours
Prerequisite: CIS 130 and two of the following: CIS 172, 176, 177, 182, 184, 185, 186, 187, or 189

This course covers the use of one of today's most powerful Web design tools, Dreamweaver. Students will cover the Dreamweaver topics and skills necessary to build and manage attractive, dynamic professional Web sites.

175 Android Programming 3 Credit Hours
Prerequisite: CIS 150

This course covers the design, implementation and publishing of apps for the Android platform. Android applications will be designed and created using Java or other programming languages. Students will work with integrated development environments and other tools to create and test complete apps.

176 Web Animation 3 Credit Hours
Prerequisite: CIS 130 and one of the following: CIS 172, 176, 180, 182, 184, 185, 186, 187 or 189.

This course covers the skills and techniques for producing and delivering high-impact Web sites using industry standard software. Students will be incorporating musical tracks, sound effects and advanced animations to create effects that are viewable across numerous Web platforms with efficient download speeds.

177 Markup Languages 4 Credit Hours
Prerequisite: CIS 130

This course covers HTML, CSS and introduces XHTML, JavaScript, and DHTML. Students will be using a case-oriented, problem-solving approach to creating web pages using these web development markup languages.

178 Design Concepts 4 Credit Hours
Prerequisite: RDG 090 or ENGL 090 or qualifying score on ACT or COMPASS tests

This course covers the fundamentals of designing informative, attractive and efficient designs. It includes design processes, techniques, color theory and typography as they relate to print, Web and interactive designs.

179 Web Script Programming 3 Credit Hours
Prerequisite: CIS 176 and CIS 177 or CIS 132 and CIS 177

This course covers the creation of dynamic Web pages using the popular Web scripting languages including JavaScript. Students will build applications from the bottom up. Client-side scripting will be explored. The goal of this course is to create Web pages that have dynamic and interactive content.

180 Graphic Design Concepts 3 Credit Hours
Prerequisite: CIS 130

This course covers print design, layout, typography and related publishing concepts. It contains essentials of print design layout, typographic composition, font selection, scanning techniques and the printing of professional-looking publications.

182 Illustrator Graphics 3 Credit Hours
Prerequisite: CIS 130

This course covers the tools and techniques of vector-based drawing software using Adobe Illustrator.

184 PhotoShop Graphics 3 Credit Hours
Prerequisite: CIS 130

This course covers tools, features, and techniques of the image editing software Photoshop.

185 Web Graphics 3 Credit Hours
Prerequisite: CIS 130

This course focuses on designing and creating professional looking Web graphics to be incorporated into Web sites. Included in this course are techniques for creating image maps, rollover effects, icons and buttons for the Web. Knowledge of Adobe Photoshop and/or Adobe Illustrator are recommended for this course.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>186</td>
<td>Multimedia Development</td>
<td>3</td>
<td>CIS 130</td>
</tr>
<tr>
<td>187</td>
<td>Digital Video Editing</td>
<td>3</td>
<td>CIS 130</td>
</tr>
<tr>
<td>188</td>
<td>InDesign Desktop Publishing</td>
<td>3</td>
<td>CIS 130 or WPR 102</td>
</tr>
<tr>
<td>189</td>
<td>3D Animation</td>
<td>3</td>
<td>CIS 130 and one of the following: CIS 176, 182, 184, 185, 186, or MDTC 228</td>
</tr>
<tr>
<td>205</td>
<td>System Analysis and Design</td>
<td>3</td>
<td>CIS 130</td>
</tr>
<tr>
<td>206</td>
<td>PC Operating Systems</td>
<td>3</td>
<td>CIS 130</td>
</tr>
<tr>
<td>208</td>
<td>Advanced Windows Server</td>
<td>4</td>
<td>CIS 230</td>
</tr>
<tr>
<td>209</td>
<td>Network Concepts</td>
<td>3</td>
<td>CIS 130</td>
</tr>
<tr>
<td>210</td>
<td>Hardware Maintenance</td>
<td>4</td>
<td>CIS 208</td>
</tr>
<tr>
<td>220</td>
<td>Hardware Maintenance</td>
<td>3</td>
<td>CIS 208</td>
</tr>
<tr>
<td>228</td>
<td>Linux Administration</td>
<td>3</td>
<td>CIS 208</td>
</tr>
<tr>
<td>230</td>
<td>Windows Server</td>
<td>3</td>
<td>CIS 208</td>
</tr>
<tr>
<td>234</td>
<td>Advanced Windows Server</td>
<td>4</td>
<td>CIS 230</td>
</tr>
</tbody>
</table>

This course covers industry standard tools and techniques for producing multimedia content. This development platform will stress the creation of compositions with sound, graphics, animation, and video that can be deployed on the Web, on DVD or with other multimedia applications.

This course provides skills and knowledge of digital video basics. Topics will include editing, transitions, audio, adding motion and other multimedia components involving digital video. This course is applicable to Web designers, graphic designers, video production artists or home digital video camera users.

InDesign Desktop Publishing is a comprehensive desktop publishing course which provides instruction in the use of sophisticated page composition software. Class projects range from simple, one-page documents to multi-page documents produced with imported text and graphics. Final class projects involve the conceptualization and creation of a variety of complex publications.

This course is an introduction to 3D animation for character animation, visual effect and 3D solid modeling. Software used includes a complete set of tools for drawing and animating 3D models and characters. Students will create objects with a variety of surfing materials, textures and effects. Students will create and animate digital models/objects.

This course is designed to guide the student in developing a system where computer hardware and/or software is to be installed or updated. The student will consider problems of data flow through the system. The student will undertake case studies involving data collection, current system analysis, recommendations, design, development and implementation of a new or updated computer system. Students may be required to design a full or partial system.

This course emphasizes the study of operating systems for personal computers. Topics include: Command Line vs. Graphical User Interfaces, batch and configuration files, disk utilities, disk operation, installing and uninstalling applications, multitasking, security, configuration and network operating systems. Operating systems discussed in this course will include Windows 9x, 2000, MS-DOS, Linux/Unix and others. This course will enhance students’ understanding of PC operations.
This course continues the exploration of computer science begun in CIS 150, Computer Science I. Topics to be covered include: object-oriented programming in C++, pointers, recursive algorithm design and implementation, sorting, searching and file processing. Abstract data types studied include: stacks, queues and lists. This course is designed for students who wish to continue their computer science education beyond the community college level.

This course will cover the fundamental principles and practices of designing and programming computer games. Students will write programs that demonstrate major lecture topics. Students will also design and implement complete computer games. The programs and games created will utilize a variety of programming techniques and tools, including C++ programming language, graphics API, a game engine, software engineering, audio editing and playback, user input, image editing software, network programming, collision detection and game design.

This course covers computer programming in one of its most basic forms and introduces computer architecture. The understanding and appreciation of assembly language is the foundation for the understanding of the digital computer and its programming. Assembly language is just one step removed from machine language, the language directly understood by the CPU. This course will cover: computer architecture, data representation, instruction sets, addressing modes, assembly language programming techniques, interrupts and exceptions, assemblers, peripheral programming and the relationship between assembly language and high-level languages.

This course covers server-side programming in PHP and the use of MySQL for the purpose of creating dynamic Web sites.

This course covers the design and maintenance of dynamic Web applications using .NET technology.

This course covers advanced tools, features, and techniques of the image editing software Photoshop.

Based on experiences in the field of architecture and construction, this course explores the work of architects and their relationships with the various supporting technicians. Consideration is given to historical, aesthetic, functional, structural and economic aspects of design.

A study of natural and manufactured building materials, including concrete and masonry, steel and non-ferrous metals, wood and composition materials, glass and plastics and exterior and interior finishing materials. In laboratory sessions, the physical properties of materials and methods of assembly are studied using material samples.

This course develops those supporting skills essential to the organization and management of construction projects, including bidding procedures, organization and interpretation of specifications, function preparation and use of the various construction documents, scheduling of construction operations and familiarization with building codes and zoning regulations.

Complete working drawings are developed for one building of frame construction, with emphasis on the interrelationships of the various views, including site and floor plans, exterior and interior elevations, sections and details. Accuracy of linework, lettering and scale are stressed.

The focus of the course is on water distribution and waste systems, calculation of heat losses and gains, “wet heat” and air handling comfort systems, including air conditioning, electrical power and lighting. Mechanical and electrical layouts are developed.

Theory and field practice in using tapes, levels and transits in land survey, building layout and contours and drainage are covered. This course includes a study of building site conditions and practice in taking field notes and in translating them into drawings.
110 Construction Blueprint Reading 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

Covered in this course are fundamentals of construction blueprint reading: interpretation of basic symbols, terminology organization of construction drawing, sketching and material quantity takeoff.

120 Introduction to AutoCAD for Architecture 3 Credit Hours
Prerequisite: CONM 103 or CONM 110

This course is an introduction to computer aided design as it applies to the architecture and construction industry. The content examines typical hardware requirements and basic software (AutoCAD) commands used to create, edit and plot 2D architectural drawing files.

160 Green Building and LEED Rating System 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS test

This course examines the practice sustainability in the built environment. Discussions and activities will explore how researchers, designers, builders and the public define/implement sustainability and green building. Case studies and other examples of current practice will present the business case for sustainability and green building by examining the “triple bottom line” of people, plant and profit. Strategies for implementation of green building techniques will be presented by guest speakers with current field experience certifying projects using the U.S. Green Building Council’s LEED rating systems. Students will also prepare for the LEED Green Associate Exam.

201 Site Planning and Development 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

This course studies the processes required to develop a functional site plan, including basic designs of pavements, parking lots layout, storm drainage, public utilities, landscaping consideration and zoning requirements.

202 Construction Safety 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

This course is designed to provide students with an opportunity for an in-depth study of construction safety and the importance of employee safety and health in the construction industry. The code of federal regulations (29 CFR 1926) and MIOSHA construction standards are examined. Emphasis will be placed on the interpretation and application of government regulations. Students who successfully complete the course will receive an OSHA 30 hour completion card.

240 Construction Planning & Scheduling with Primavera 3 Credit Hours
Prerequisite: CONM 101 and CONM 110

This is a comprehensive course which introduces proper project planning, scope and schedule development. Topics include: activity durations and the methods of determining them, PERT, precedence, linear scheduling, resource allocation development of a work breakdown structure, resource loading, cost loading and resource leveling. The students will identify required activities, resources and costs required to monitor a project throughout the construction process. Students will be required to complete both manual and computerized scheduling assignments. Students will use professional scheduling software to complete assigned projects.

242 Construction Documents and Law 3 Credit Hours
Prerequisite: CONM 240

This course will examine the relationship between the construction contract documents and the construction process. The focus will be on the rights, duties and responsibilities of the owners, contractors and suppliers. Topics covered include: standard document forms, specifications, bonding, insurance, claims, disputes and payments. Legal issues and disputes resulting from changing conditions, delays, changes to work and differing site conditions are also explored.

244 Construction Estimating 3 Credit Hours
Prerequisite: CONM 101 and CONM 110

This course covers the processes used to tabulate accurate construction cost estimates. Quantity survey techniques are used to determine equipment, labor and material costs. A detailed cost estimate and bid package will be developed using computer database and estimating software. Conceptual cost estimating is introduced.

248 Case Studies in Construction Management 1 Credit Hour
Prerequisite: CONM 242

This course is designed to explore actual construction project case studies related to planning, scheduling, estimating and contract administration.

COOPERATIVE EDUCATION (CO-OP)

Cooperative Work Experience 1 to 4 Credit Hours

Cooperative education is for students interested in an introduction to the world of work. It is designed to give on-the-job experience which is related to the student’s program of study. The co-op experience may be on a half-time or full-time basis. If employed from 15-20 hours per week in an approved coordinated program, the student is entitled to two hours of credit upon successfully completing the semester. Full-time status generally represents 40 hours per week of coordinated work. Students electing full-time co-op should plan to limit their campus schedule to one or two courses. Arrangements for the co-op program must be made through the proper co-op coordinator or division dean.
CRIMINAL JUSTICE (CRJ)

154 Introduction to Law Enforcement 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This course addresses the basic elements of our legal system, the nature of crime and criminal responsibility, the criminal justice system and the role of professionals in the criminal justice system.

156 Fundamentals of Criminal Investigation 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This course examines investigative procedures including theory, conduct, collection and preservation of physical evidence.

170 Introduction to Corrections 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This course is an introduction to a field of corrections. The focus will be on the historical development of correctional systems and practices, the role of corrections in the criminal justice system, theories concerning the characteristics and treatment of the offender, sentencing guidelines and important issues facing the correctional system today. Field trips and observation visits are an integral part of the course.

251 Criminal Law 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
This course is designed to provide a foundation for criminal law in the United States, providing definitions of crimes, their elements, penalties and defenses. The essential skill emphasized in the course is critical thinking.

252 Juvenile Delinquency 3 Credit Hours
Prerequisite: SOC 151
F, W
This course deals with theories of causation and prevention with emphasis on juvenile courts, institutional treatment and community resources for prevention.

255 Police Organization and Administration 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W
The administration of police-line operations including patrol, the investigative functions, traffic, vice control, youth services and non-crime functions are emphasized. The purpose of this course is to have the student understand the administrative role a police department has in order to provide police services to a community.

256 Police Operations 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
W
This course focuses on the day-to-day operations of a police organization. Emphasis focuses on patrol, reports, communications, arrests, officer survival skills, community relationships and jail operations.

CULINARY SKILLS AND MANAGEMENT (CSM)

Enrollment in any CSM course is restricted to students who have been accepted into the Culinary Skills and Management Program.

Food Preparation I

101A Introduction to Culinary Arts 4 Credit Hours
Prerequisite: CSM 111
F
Students learn the fundamentals of food preparation in the food service business, including safety skills, modern kitchen tools and equipment, properties and composition of food and basic knowledge of meats, poultry and seafood. The study of basic cooking principles, weights and measures, regions andadastrostals, and vegetables and starch preparation, along with basic recipes, are all stressed in this course to help prepare students for culinary careers. Students are required to register for all modules of CSM 101 concurrently.

101B Basic Restaurant Production 2 Credit Hours
F
Students study and demonstrate, through extensive hands-on training, daily food service production. Through rotations of training stations, students maintain and operate entree production, garnishes and salads, soups, stocks and sauces, beginning baking and basic food preparation. Students are required to register for all modules of CSM 101 concurrently.

101C Baking I 2 Credit Hours
F
Students study and demonstrate, through daily production, the basic baking skills used in modern food service establishments. This includes principles and mixing procedures for quickbreads and yeast doughs, weighing and portioning, recipe conversions and types of ingredients. The use of yeast doughs and sweet doughs is an important objective of this course. Students are required to register for all modules of CSM 101 concurrently.

101D Soups, Stocks, & Sauce Production 2 Credit Hours
F
In modern food service, a thorough understanding of soups, stocks and sauce production is vital for the successful cook. Through daily production, students demonstrate the proper preparation of stocks, reductions and glazes, as well as convenience bases. Roux and other thickening agents are taught with uses in sauce production. Soups, classifications and varieties such as bisque, consomme, puree soup and chowders are regularly prepared. Students are required to register for all modules of CSM 101 concurrently.

111 Food Sanitation 2 Credit Hours
Su
This course is an operations-centered certification course which will provide culinary students with basic principles of sanitation for food service. The course will include ways to apply these principles to practical situations, as well as methods of training and motivating employees to follow good sanitation practices. Students will study the laws and regulations related to safety, fire and sanitation and adhere to them in the food service operation. Upon successful completion of this course, students may take the examination for an Applied Foodservice Sanitation Certificate, which meets or exceeds FDA recommendations on content for sanitation courses. This is the most universally recognized and accepted sanitation certification. Students may also receive the State of Michigan Sanitation Certificate.
114 Nutrition 2 Credit Hours 2 Billable Contact Hours
Prerequisite: CSM 116A and CSM 116B and CSM 116C and CSM 116D

The objectives of this course are designed to make the food service student aware of nutrient needs throughout the life cycle and to apply those principles to menu planning and food preparation. Students also learn the characteristics, functions and food sources of the major nutrient groups and how to maximize human health.

Food Preparation II

116A Introduction to Buffet Preparation 4 Credit Hours 5.6 Billable Contact Hours
Prerequisite: CSM 101A and CSM 101B and CSM 101C and CSM 101D

Students will obtain cooking and learning experience in this course, including the demonstration and practical application of preparing and serving salads and salad dressings, sandwiches and hors d’oeuvres, along with an introduction to food garnishing. The importance of breakfast is thoroughly covered, including breakfast cooking, dairy products, cheese, coffee and tea. Students also demonstrate how to cook with herbs and spices and wines and spirits, along with an introduction to ice carving. Students are required to register for all modules of CSM 116 concurrently.

116B Beginning Pastries 2 Credit Hours 2.8 Billable Contact Hours
Prerequisite: CSM 101A and CSM 101B and CSM 101C and CSM 101D

This course is designed to introduce the student to the wide range of pastries used in commercial food service establishments. The preparation and uses of puff dough, Danish dough, French pastries and international pastries are studied and demonstrated by the student. Students also learn about and produce gateaux, wedding cakes, chocolate covered, including breakfast cooking, dairy products, cheese, coffee and tea. Students also demonstrate how to cook with herbs and spices and wines and spirits, along with an introduction to ice carving. Students are required to register for all modules of CSM 116 concurrently.

116C Baking II 2 Credit Hours 2.8 Billable Contact Hours
Prerequisite: CSM 101A and CSM 101B and CSM 101C and CSM 101D

Students study and demonstrate, through daily production, the basic baking skills used in modern bakery facilities, including the principles and mixing methods of pies and cakes. Weighing and portioning, recipe conversions and the study of ingredients are also explored. Students will prepare and bake pies, as well as finish cakes with different icings and decorations. Students are required to register for all modules of CSM 116 concurrently.

116D Institutional Food Preparation 2 Credit Hours 2.8 Billable Contact Hours
Prerequisite: CSM 101A and CSM 101B and CSM 101C and CSM 101D

Through daily hands-on production, students study and demonstrate the proper techniques of institutional food preparation. This area of food service is becoming more upscale every day. Areas of study include an emphasis on international and regional cuisines, as well as working with flavoring, portion control and proper handling of convenience food products in food service today. Students are required to register for all modules of CSM 116 concurrently.

Advanced Food Preparation I

201A Introduction to Hospitality Industry 2 Credit Hours 3 Billable Contact Hours
Prerequisite: CSM 116A and CSM 116B and CSM 116C and CSM 116D

This course is designed to introduce the student to the wide range of businesses in the hospitality industry. Students study various food service organizations and career opportunities which include business organizational structures and basic functions of departments within food service establishments. A close study of catering services, including on- and off-premise catering, is also emphasized in this course. Students are required to register for all modules of CSM 201 concurrently.

201B Dining Room Procedures 1 Credit Hour 1.5 Billable Contact Hours
Prerequisite: CSM 116A and CSM 116B and CSM 116C and CSM 116D

Through daily operations of the Cuisine 1300 restaurant, students learn the various types of dining service appropriate for different food service operations. Students also learn how to serve the public, including tableside cookery, taking orders, serving food, and, through use of a modern computer cash register system, cashing out and end-of-the-day sales mix. Students are required to register for all modules of CSM 201 concurrently.

201C Menu Planning I 1 Credit Hour 1.5 Billable Contact Hours
Prerequisite: CSM 116A and CSM 116B and CSM 116C and CSM 116D

This course introduces students to one of the most important aspects of the food service industry. The principles of menu planning for various types of facilities are applied. The course covers menu layout, selection and development and pricing/food cost structure. Students plan, cost and determine the menu used in the Cuisine 1300 restaurant. Students are required to register for all modules of CSM 201 concurrently.

201D Purchasing and Receiving 1 Credit Hour 1.5 Billable Contact Hours
Prerequisite: CSM 116A and CSM 116B and CSM 116C and CSM 116D

Students learn the principles and practices concerned with the purchasing and receiving of food, supplies and equipment for various food service operations. The importance of developing a purchasing system, an effective storeroom and proper use of checklists and bid sheets are all covered in detail. Students are required to register for all modules of CSM 201 concurrently.

201E a la Carte Food Preparation 3 Credit Hours 4.5 Billable Contact Hours
Prerequisite: CSM 116A and CSM 116B and CSM 116C and CSM 116D

This course prepares the student for the wide variety of a la carte food service establishments in the modern industry. Through daily operations of the Cuisine 1300 kitchen facility, students rotate through various stations, obtaining vital hands-on experience and training. The principles of a la carte food preparation, such as menu development and food/labor costs, are also emphasized to the student. Students are required to register for all modules of CSM 201 concurrently.
Advanced Food Preparation II

216A Garde Manger 2 Credit Hours
Prerequisite: Take CSM 201A and CSM 201B and CSM 201C and CSM 201D and CSM 201E

This course is designed to teach the student the art of garde manger and food presentation. The focus is on specialty work, including ice and butter sculptures, vegetable carving, salt dough, charcuterie and tallow sculpturing. Through a series of elaborate theme buffets, students also are introduced to platter presentation and salon competitions. Students are required to register for all modules of CSM 216 concurrently.

216B Menu Planning II 1 Credit Hour
Prerequisite: CSM 201A and CSM 201B and CSM 201C and CSM 201D and CSM 201E

Students take the menu role and concept one step further in this course. Students develop menus for buffets and utilize them in the Cuisine 1300 restaurant and buffet operations. Students learn to utilize past menus and buffet statistics to aid in forecasting and planning. Students are required to register for all modules of CSM 216 concurrently.

216D Advanced Buffet Preparation 3 Credit Hours
Prerequisite: CSM 201A and CSM 201B and CSM 201C and CSM 201D and CSM 201E

This course is designed to teach the student the art of creating and displaying hot and cold foods and to exhibit these foods. Emphasis of this course is on artistic presentation and layout of foods prepared for theme buffets that are served in the Cuisine 1300 restaurant and buffet operations. These popular buffets are open to the public and feature such items as ice carvings, charcuterie products and classical foods and pastries. Students are required to register for all modules of CSM 216 concurrently.

216E Contemporary Food Design & Architecture 2 Credit Hours
Prerequisite: CSM 201A and CSM 201B and CSM 201C and CSM 201D and CSM 201E

This course is designed to introduce and familiarize students with the art of plate and platter design for fine cuisine. The scope includes international and cultural food preparation, and display, molecular gastronomy and food architecture. The course must be taken in conjunction with all other CSM 216 courses.

DANCE (DANCE)

151 Ballet I 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on COMPASS or ACT tests

The purpose of this course is to introduce the student to ballet technique. Music accompaniment will enhance and complement the types of movements inherent to ballet dance. Emphasis is on personal growth with each class and assignment being a new challenge. Proper attire, terminology and health and safety issues are discussed. Written and skills tests are part of this course. Due to the fact that ballet dance has aerobic components, a medical release may be required. This class may be repeated for credit twice (total 3 credits).

152 Modern Dance I 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying score on COMPASS or ACT tests

The purpose of this course is to introduce the student to the principles of modern dance techniques designed for the inexperienced dancer. Toning, stretching and strengthening exercises are incorporated to promote the investigation of the body's overall range of motion. Music accompaniment may be utilized to complement the movement. Emphasis is on personal growth with each class and assignment being a new challenge. Attire, terminology, and health and safety issues are explained and discussed. Written and skills tests are part of this course. Due to the fact that modern dance can be aerobic, a medical release may be required. This class may be repeated for credit twice (total 3 credits).

153 Jazz I 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying score on COMPASS or ACT tests

The purpose of this course is to introduce the student to the study of jazz through movement, vocabulary and toning, isolations in jazz techniques and stretching and strengthening exercises inherent to this form of dance. Music will be utilized in each class to complement the jazz dance styles chosen for study. Emphasis is on personal growth with each class and assignment being a new challenge. Attire, terminology, and health and safety issues are explained and discussed. Written and skills tests are part of this course. Due to the fact that jazz dance is aerobic by nature, a medical release may be required. This class may be repeated for credit twice (total 3 credits).
DANCE 155 Dance Improvisation I 1 Credit Hour 2 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W

The purpose of this course is to create an atmosphere in which students can realize and enhance their own creative resources by utilizing the dance medium. This course provides students with opportunities to discover the skills of creative thinking through problem-solving exercises which are designed to uncover spatial, kinesthetic and emotional awareness, as well as the discovery of movement qualities. Emphasis is on personal growth with each class and assignment challenging the student’s own initiative to move physically and think quickly. Attire, terminology and health and safety issues are explained and discussed. Written and creatively challenging skills tests are part of this course. Because some of the class content may involve aerobic components, a medical release may be required. This class may be repeated for credit twice (total 3 credits).

DANCE 170 Dance Composition I 2 Credit Hours 2 Billable Contact Hours
Prerequisite: DANCE 152 and DANCE 155 F

The purpose of this course is to introduce the student to the study of dance composition. The semester will be spent with the intent to obtain an understanding of the elementary components that may be utilized in choreographing a dance. The concept of dance language and symbol system will be introduced. Emphasis is on one’s individual growth process in relation to the concepts of this course as presented in class. Written and skills tests are a part of this course. Because some creative processes are aerobic by nature, a medical release may be required. This class may be repeated for credit twice (total 6 credits).

DANCE 219 Methods of Teaching Activities & Fundamental Movements 2 Credit Hours 2 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W

This course will develop knowledge and increase skills in basic locomotor and axial movements with an emphasis on rhythmic patterning and interactive activities. The student will gain experience in teaching, performance, movement analysis and evaluation of dance skills with the goal of confidently planning and implementing them within a K-12 or recreational classroom setting.

DANCE 251 History of Dance 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W

This course serves as a foundation in which to develop a greater understanding of the chronological events, people and places that shaped dance into an art form, a medium of expression and aesthetic experience. Students will examine dance as it has served as ritual, play and art from primitive societies to present. Participants will investigate the major genres including ballet, modern, jazz, tap, musical theater, social dance and world dance forms. The course promotes research and discoveries of key figures, major contributors and collaborators. The relevance of dance education and dance career options are also discussed.

EARLY CHILDHOOD EDUCATION (ECE)

ECE 100 Foundations of Early Childhood 3 Credit Hours 3 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests F, W

This course provides an introduction to the field of early childhood education for students interested in pursuing a career in the profession. An overview of the foundational content of early childhood education is presented with the focus on the young child, the teacher, the family, and the learning environment. It presents a respectful, culturally sensitive, and child-family centered approach to the care, development, and learning of the young child.

ECE 102 Child Growth and Development 3 Credit Hours 3 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests F, W

This course presents the theory and stages of child development from the prenatal period through the young child of eight years. The student will gain an understanding of child development in the areas of perceptual, motor and physical development, emotional and social development, and cognitive, language and literacy development. The related topics of health, nutrition, safety, and children with special needs are also discussed. The focus of the course is to prepare the student with knowledge of growth and development to enhance their ability to provide educational experiences and interactions that support children’s development and learning.

ECE 104 Nutrition/Health/Safety for Early Childhood Education 3 Credit Hours 3 Billable Contact Hours
Corequisite: ECE 102
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests F, W

This course presents a holistic approach to the wellness of children in relation to their safety, nutrition, and health in various environments and early childhood education settings. It discusses the provision of quality early childhood education environments that ensure the physical and emotional well-being of children. Knowledge of child development is reviewed to address the safety, nutritional and health needs of children throughout the developmental stages. Students will develop an instructional unit on one of these areas related to the wellness of children.

ECE 106 Observation and Assessment of Childhood Development 3 Credit Hours 3 Billable Contact Hours
Prerequisite: ECE 100 and ECE 102 and ECE 104 W

This course assists the student to develop the skills and experience essential to the observation, recording, and assessment of the development and behavior of young children. Child and family communication and guidance techniques consistent with knowledge of child development and professional standards are emphasized. Students will participate 45 hours in an approved early childhood setting to perform various observation assignments and to develop a case study on a select child. Students will also compile a portfolio documenting the observation and assessment of the child’s development and behavior. The portfolio assessment is discussed in relation to curriculum and program development.
This course focuses on the provision of developmentally appropriate practice in the care and learning of infants and toddlers from birth to age three. It presents the design of curriculum, activities, and experiences to support the child's physical, sensory-motor, cognitive, language, and social-emotional development. Child, family, and caregiver interactions and guidance techniques consistent with knowledge of child development and professional standards are emphasized. The creation of active learning environments and child and program assessment is addressed. Students will participate 45 hours in an approved early childhood setting to perform observation assignments and develop a unit of instruction for the infant and toddler.

This course focuses on the care, development, and learning needs of diverse children. It discusses children with special needs related to cognitive, speech and language, motor and sensory impairments. Children with acute and chronic health problems and emotional disorders are also discussed. Significant social issues including poverty, homelessness, and family violence are explored. Strategies for communicating and working with diverse children and families and use of school and community resources are presented.

This course focuses on the provision of developmentally appropriate practice in the care and learning of preschool children ages three through five. It presents the design of curriculum, activities, and experiences to support the child's physical, sensory-motor, cognitive, language, and social-emotional development. Child and family communication and guidance techniques consistent with knowledge of child development and professional standards are emphasized. The creation of active learning environments and child and program assessment is addressed. Students will participate 45 hours in an approved early childhood setting to perform observation assignments and develop a unit of instruction for the preschool child.

This course focuses on the provision of developmentally appropriate practice in the care and learning of school-age children. It presents the design of curriculum, activities, and experiences to support the child's physical, cognitive, psychological, moral, and social development. Child, family, and caregiver interactions and guidance techniques consistent with knowledge of child development and professional standards are emphasized. The planning of curriculum, including programs, learning environments, and activities for school-age children is discussed. Students will participate 45 hours in an approved early childhood setting to perform quality program assessments and develop a unit of instruction with activities and experiences for school-age children.

This course focuses on the competencies and requirements central to the development and administration of early childhood education programs. It discusses the role of the director/administrator and details the administrative responsibilities in the management of these programs. Professional standards designated by the National Association for the Education of Young Children (NAEYC) are emphasized. Background knowledge of growth and development, assessment, and the needs of children are reviewed. The creation of the developmentally appropriate curriculum, communications with children, families and community, and child, staff, and program evaluations are discussed.

This capstone course prepares the student teacher for future employment through a weekly practical experience in the care and teaching of children under the supervision of qualified staff in a child care facility. Classroom instruction addresses the fundamentals of the teaching-learning process and competent mastery of the role of beginning early childhood teacher. The application of acquired knowledge to support the care, development, and learning of the young child is emphasized. Students will demonstrate their performance in the care and teaching role during a 150 hour placement under the supervision of staff and faculty in a licensed child care facility. Students will compile a portfolio as a representative collection of their student teacher accomplishments.

This course is an introduction to earth sciences for beginning students. The course is designed to show the numerous and important ways in which geology and some aspects of meteorology, oceanography and solar-system astronomy interrelate with humankind and our environment. Emphasis is on broad concepts and fundamental principles of earth science and their application to environmental considerations. Course requires laboratory work.

This course is a survey of the economic system, including ideas relating to production, national income, national growth, money and banking, markets and prices and the distribution of income. This is a macro-economics course designed for both the student who needs one semester in economics and the student who will take further courses in the field.
This is a survey course of the microeconomic system, including ideas relating to pricing and output determination, factor income, economic development, international economics and market structures.

**ELECTRONICS AND COMPUTER TECHNOLOGY (ELEC)**

125 Fundamentals of Electricity  
3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests  
F, W, Sp

This course is designed as a survey for electronics majors and non-majors. It covers safety, basic electrical theory (AC and DC), Ohm’s Law, reading schematic drawings, electrical component identification and functions, sources of electrical power, motors, power distribution and basic solid-state devices. Laboratory exercises will include measurement of resistance, voltage and current with analog and digital meters; basic oscilloscope use; relays and transformers; circuit design and construction; and component testing.

127 AC/DC Motors  
3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: ELEC 125  
F

This course is designed to provide students with a knowledge of AC/DC motor operating characteristics and control circuits. It will provide hands-on experience with wiring control circuits, checking the operational characteristics of motors and the use/installation of circuit protection devices. Development and application of ladder logic theory, diagrams and circuits will be covered. This course acquaints the student with concepts and applications of three-phase power, including wye and delta configurations. Basic operation and circuit characteristics of three-phase alternators and transformers will be covered. The construction and operation of three-phase induction motors and their related starting, control and protection circuits along with variable-frequency drives will also be addressed.

130 Introduction to Programmable Logic Controls  
3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: ELEC 125  
F

The course introduces the concepts and applications of the control and protection of industrial machines and systems through the use of programmable logic controllers (PLCs).

132 Electronics I  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: ELEC 125  
W

This course is an introduction to basic, solid-state electronic circuits. Elementary mathematical techniques are used to analyze circuit performance, and coordinated laboratory activities verify these predictions. Topics covered include diodes, basic power supplies, transistors and amplifiers in the common-emitter and common-base and common-collector configurations, as well as field-effect transistors, basic operational-amplifier circuits and electronic properties of digital ICs.

133 Circuit Analysis  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: ELEC 125 and MATH 124 or MATH 151 or MATH 157 or MATH 159 or MATH 164 or MATH 171  
F

Topics covered are: phasor analysis of series AC circuits, both resistor-capacitor and resistor-inductor; phasor analysis of parallel AC circuits, both RC and RL; magnetism; magnetic field in a coil (inductor); inductive transient response to switched DC; impedance of complex AC circuits; oscilloscope phase measurement techniques; power factor in AC circuits; series-resonant LC circuits; parallel-resonant LC circuits; filtering using resonant LC circuits; the j-operator; voltage-division in DC and AC; bridge circuit analysis in DC and AC; Thévenin’s theorem in DC and AC; and computer-aided circuit analysis in DC and AC frequency domain.

135 Digital Electronic Logic  
4 Credit Hours  
6 Billable Contact Hours  
Prerequisite: ELEC 125. Taking ELEC 132 concurrently is recommended.  
W

An introduction to digital components, circuitry and systems. Topics covered are: logic gates, networks and truth tables; logic-network description and simplification using Boolean algebra; binary and hexadecimal numbers and arithmetic; various types of integrated-circuit flip-flops; digital counters and registers; digital arithmetic circuits; astable clocks; one-shots; decoders; memories and display devices.

136 Instrumentation  
3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: ELEC 125  
W

Measuring and Test Equipment (M&TE) is a vital part of almost all industry. This course examines the characteristics and limitations of common instruments. A major focus is on calibration techniques and standards for such equipment. Topics covered include safety, lab techniques, AC and DC meters, digital multimeters, bridges, signal-processing circuits, and typical instruments for measuring parameters such as torque, pressure, temperature, dimensional, mass, force, and others.
137 Microprocessors 4 Credit Hours 6 Billable Contact Hours
Prerequisite: ELEC 135 F

This course is devoted to assembling and programming microprocessor/microcontroller systems with an emphasis on using the 68HC11 microcontroller. Covered are: computer architecture, memory types, interfacing techniques and components and machine-language programming. Flowcharting, computerized program assembly, and proper hardware and program documentation are emphasized. Lab projects include, but are not limited to, an electronic "player-piano," programmable timing circuits and an autonomous robot.

138 Machinery and Power Control 4 Credit Hours 6 Billable Contact Hours
Prerequisite: ELEC 132 W

This course deals with rotating machines and their control and industrial machine control systems. Topics covered include: construction and operating principles of DC generators and DC motors; voltage-vs.-current characteristics of various types of DC generators; speed-vs.-torque and current-vs.-torque characteristics of various types of DC motors; switchgear starting and control circuits; power control with silicon controlled rectifiers (SCRs) and triacs; characteristics of unijunction transistors (UJTs), diacs and other thyristors; construction and operating principles of single-phase and three-phase alternators and three-phase AC induction motors; power measurement in three-phase systems; three-phase transformers, and programmable logic controller (PLC) operation.

141 Industrial Automation & Process Control 3 Credit Hours 4 Billable Contact Hours
Prerequisite: ELEC 125 W

Topics covered: the three subsystems in industrial control systems--information-gathering, logic and output; some typical industrial control systems for machine tool processes and materials handling; programmable logic controllers; the differences between open-loop and closed-loop control; terms used in industrial closed-loop control; the five modes of control; effects of varying proportional band, integral (reset) time-constant and derivative (rate) time-constant; operating principles and applications of electrical transducers (thermocouples, photocells, tachometers, etc.); output devices (valves and valve-operators, AC and DC motors etc.); and principles and applications of DC drive systems.

144 PC-Based Data Acquisition Control 2 Credit Hours 3 Billable Contact Hours
Prerequisite: ELEC 132 W

This course will provide students with the necessary background, theory and laboratory experience to utilize Windows-based computers, LabView software, interface hardware and software for data recording, analysis and online control of industrial processes. Multiple inputs and data logging, A/D conversion and various computer interface bus standards are discussed and implemented.

156 Introduction to Renewable Energy Systems 3 Credit Hours 4 Billable Contact Hours
Prerequisite: RDG 090 or MATH 119 or qualifying COMPASS or ACT scores on COMPASS or ACT tests F

This course explores the basic principles of energy systems for both renewable and conventional energy. Topics include the technical nomenclature and critical analysis techniques for energy systems, as well as its generation, flow, conversion, storage, economics, consumption, sustainability, conservation, environmental impact, and regulatory concerns.

157 Introduction to Solar Energy Systems 3 Credit Hours 4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying COMPASS or ACT scores
Corequisite: MATH 119 or qualifying COMPASS score and ELEC 125 and ELEC 156 F

This course introduces the basics of solar energy systems: collection, conversion, transmission, and storage for both thermal and photovoltaic systems. Topics include history, terminology, solar radiation, domestic hot water systems, passive solar house heating, and photovoltaic power systems.

158 Introduction to Wind Power 3 Credit Hours 4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying COMPASS or ACT scores
Corequisite: MATH 119 or qualifying COMPASS score and ELEC 125 and ELEC 156 F

This course introduces the field of wind energy. The course will cover the history and development of the wind industry, along with its terminology, technologies, electronics, power generation and storage, on/off grid operation, siting and permitting. Safety, economics, and environmental issues will be covered as well.

200 Electronic & Electrical Troubleshooting 4 Credit Hours 6 Billable Contact Hours
Prerequisite: ELEC 132 F

This course introduces the logic and concepts of a systematic approach to troubleshooting and repair of a variety of electrical and electronic equipment.

211 Medium Voltage Power Distribution System 3 Credit Hours 3 Billable Contact Hours
Prerequisite: ELEC 125 W

The course deals with industrial applications of power distribution and circuit applications of voltages of 480 volts and higher. Safety is emphasized throughout the course. National Electrical Code requirements are referenced in all application areas.

214 National Electrical Code 2 Credit Hours 2 Billable Contact Hours
Prerequisite: ELEC 125 F

This course is a study of the current National Electrical Code for the installation of electrical equipment and electrical systems. Topics covered include wiring methods and materials, general use materials, special occupancies, equipment for special conditions, requirements for communication systems and use of the tables and examples.
This course expands on and applies the PV concepts and principles from ELEC 157. This is a hands-on course where PV systems are sized, designed, configured, procured, built, tested, and maintained.

**ENGLISH (ENGL)**

*Students who score below specified minimum on the ACT or COMPASS English placement test must successfully complete ENGL 090 prior to enrolling in a 100-level or higher English course.*

**090 Basic Writing Skills**

3 Credit Hours

Prerequisite: Minimum test competencies in English must be met before registering for this course (This class does not count toward graduation) F, W, Sp

This is a basic writing course that examines the elements of sentence structure with some emphasis on grammar and punctuation, proceeding to topic sentence analysis, paragraph and essay development. The purpose of this course is to develop the writing skills necessary to perform acceptably in English 101 or English 151. This course does not count toward graduation. English 090 is meant for students whose first language is English.

**101 Written & Oral Communication**

3 Credit Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests F, W, Sp

This course is designed for, but not limited to, students in technical and business career programs. It helps students develop their written and oral communication skills with the emphasis on writing.

**102 Business Writing**

3 Credit Hours

Prerequisite: ENGL 101 or ENGL 151 F, W, Sp

This course emphasizes communication skills for business and technical careers. Special emphases include preparing a resume, oral briefing and practicing skills for effective job interviews. Students will also develop skills in writing all types of business letters and reports.

**151 English Composition I**

3 Credit Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests F, W, Sp, Su

This is the core course in English composition. It covers primarily expository writing, grammar, analysis and punctuation. Emphasis is placed on structure, style and appropriate usage. This course transfers to most four-year colleges and universities as the introductory writing course. Students will produce and edit a variety of written documents.

**152 English Composition II**

3 Credit Hours

Prerequisite: ENGL 151 F, W, Sp, Su

The emphasis of this course is on research and writing the research paper. Writings include topics taken from a variety of selected readings. The course is a continuation of English 151.

**155 Technical Writing**

3 Credit Hours

Prerequisite: ENGL 101 or ENGL 151 and basic word processing skills F, W, Sp, Su

Students will learn to analyze and interpret technical information and to communicate effectively and efficiently in writing using the vocabulary of the business and technical worlds. Writing assignments and projects will include a variety of business and technical applications and report writing. Conducting research, analyzing various writing, writing correspondence and instructions, preparing an oral briefing and engaging in group projects will promote critical thinking and teamwork.

**240 African American Literature**

3 Credit Hours

Prerequisite: ENGL 151 F, W, Sp, Su

This is a survey course of major literary works by African American authors from the 18th century to the present. This course is designed to expose the student to a broad range of works by African Americans, develop critical reading and writing skills, analyze African American literature and art as an important part of American culture, and promote a better understanding of our multicultural society. This course is a satisfier course for the Global Studies Degree Designation.

**251 Introduction to Poetry and Drama**

3 Credit Hours

Prerequisite: ENGL 151 F, W, Sp, Su

The course examines selected poetry and drama, emphasizing the development of critical attitudes needed to understand and enjoy these literary forms. About half a semester is spent on each form.

**252 Introduction to Short Story and Novel**

3 Credit Hours

Prerequisite: ENGL 151 F, W

This course includes reading and analysis of short stories and novels of major authors in order to develop the critical attitudes needed for understanding and enjoyment of these literary forms. This course will include writing assignments and library work.

**253 American Literature**

3 Credit Hours

Prerequisite: ENGL 151 F, W

This is a survey course of major literary works, mainly of 19th- and 20th century authors, designed to develop the ability to read critically with understanding and appreciation. The major units constitute a general framework for American writers from early American authors to the present. The literature covers numerous genres, but mainly short fiction, poetry, and essays.

**254 Advanced Composition**

3 Credit Hours

Prerequisite: ENGL 151. Faculty nominated and instructor approved F, W

This course offers selected students theory and practice in peer tutoring and advanced composition. Emphasis is placed on student writing conferences, process writing and standard research methods. All students enrolled in this course work as tutors in the Writing Center.
255 Women's Writings 3 Credit Hours
Prerequisite: ENGL 151
This course will introduce students to writings by women. This course will trace the development of women's writings in a variety of genres, including, but not limited to: novels, short stories, poetry, diaries, journals, essays, and autobiographies. The readings will represent diverse cultures, as well as a variety of historical periods. Students in the class will also learn about the social, political, and historical context of the assigned readings, as well as a number of critical approaches to their interpretations. This course is a satisfier course for the Global Studies Degree Designation.

256 Children's Literature 3 Credit Hours
Prerequisite: ENGL 151
This course is intended for prospective teachers, as well as students preparing for careers in child care. Students will survey a wide variety of children's books (classic and contemporary) and will practice methods for introducing literature to children from pre-school age to high school. Coursework will include writing assignments, class presentations and library research. This course is a satisfier course for the Global Studies Degree Designation.

260 Introduction to Shakespeare 3 Credit Hours
Prerequisite: ENGL 151
This course is a study of Shakespeare through reading and discussion of six to nine plays selected from the comedies, histories, tragedies and romances. The class may view videos of plays being studied or attend a live performance. The purpose of this course is to present mastery of Shakespeare's artistry in light of his world and ours. This course is a satisfier course for the Global Studies Degree Designation.

261 Introduction to Creative Writing 3 Credit Hours
Prerequisite: ENGL 151
This course will introduce the student to the art and craft of creative writing. Each student's work will receive attentive individual scrutiny by the instructor and will be discussed in class and in individual conferences. In addition, the course will include analytic reading of the work of other students and of professional writers.

266 Non-Western Literature 3 Credit Hours
Prerequisite: ENGL 151
This is a survey course that examines cultures and literatures from outside the Euro-American tradition. Through the use of selected genres (poetry, drama, short story, and novel), students will become familiar with 20th century authors, representing multiple voices from multiple countries. Included as readings are texts from Africa, the Middle East, India, Southeast Asia, China, and Japan. This course is a satisfier course for the Global Studies Degree Designation.

267 British Literature: Anglo Saxon to 18th Century 3 Credit Hours
Prerequisite: ENGL 151
This course is a survey study of the literature of England from the Anglo-Saxons through the eighteenth century. Emphasis will be given to the major writers of the British canon from Anglo-Saxon poetry to Samuel Johnson. Examples of different genres (poetry, prose, drama, etc.) will be read and discussed. Students will also explore the various literary movements that shaped those writers. This course is a satisfier course for the Global Studies Degree Designation.

268 British Literature: Romantic to Modern 3 Credit Hours
Prerequisite: ENGL 151
This course is a survey study of the literature of England from the Romantic writers through the 20th century. Emphasis will be given to the major writers of the British canon from William Wordsworth to Seamus Heaney. Examples of different genres (poetry, prose, drama, etc.) will be read and discussed. Students will also explore the various literary movements that shaped those writers. This course is a satisfier course for the Global Studies Degree Designation.

FRENCH (FREN)

151 Elementary French I 4 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course is an introduction to the French language. The emphasis will be on learning to read and interpret French. Students will study elementary grammar, pronunciation and basic vocabulary. Language laboratory work and/or instructional aids will be included. This course is a satisfier course for the Global Studies Degree Designation.

152 Elementary French II 4 Credit Hours
Prerequisite: FREN 151 or one year high school French
This course is a continuation of French 151. There will be emphasis on aural and oral practices. Also, there will be a study of French contemporary life and reading selections. There will be instructional aids included. The primary purpose of this course is to have the students read and write the French language at a fluent elementary level, with comprehension at the same level. This course is a satisfier course for the Global Studies Degree Designation.

251 Second Year French I 4 Credit Hours
Prerequisite: FREN 152 or two years high school French
This course will be a review of grammar and practice in oral and written French, based on selected readings and lectures. This course emphasizes writing and reading skills. Short papers and essays will be written in French. This class will culminate in the writing of a research paper in French. This course is a satisfier course for the Global Studies Degree Designation.
252 Second Year French II 4 Credit Hours
4 Billable Contact Hours
Prerequisite: FREN 251 or three years high school French

This course is a continuation of French 251. There will be emphasis on aural and oral practices. Also, there will be a study of French contemporary life and literature. There will be instructional aids included. This course emphasizes reading French literature and will culminate in the writing of a report on a piece of French literature. Several pieces of French literature will be read during the course. The primary purpose of this course is to have the students read and comprehend French literature at a fluent intermediate level. This course is a satisfier course for the Global Studies Degree Designation.

GEOGRAPHY (GEOG)

151 Elements of Physical Geography 4 Credit Hours
4 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests

This course is an introductory study of geography's physical elements. Topics include sun-earth relationships, maps, plate tectonics, climate, landforms, erosion, soils, rocks and minerals.

152 World Regional Geography 3 Credit Hours
3 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on COMPASS or ACT tests

This course provides a world regional survey emphasizing regional distinctions including population characteristics, environmental features, basic resources, political structure and economic activity within the major geographical regions with a focus on cause and effect and man/land relationships.

GERMAN (GERMN)

151 Elementary German I 4 Credit Hours
4 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests

This beginning course in German provides an introduction to German language and culture. The student will learn basic structures and vocabulary of the target language as well as practice the four basic language skills: reading, writing, listening and speaking. This course is a satisfier course for the Global Studies Degree Designation.

152 Elementary German II 4 Credit Hours
4 Billable Contact Hours
Prerequisite: GERMN 151 or one year high school German

The student will learn more advanced structures of the target language and additional vocabulary. The proficiency orientation of the class allows extensive practice in the four basic language skills: reading, writing, listening and speaking. This course is a continuation of GERMN 151. This course is a satisfier course for the Global Studies Degree Designation.

251 Second Year German I 4 Credit Hours
4 Billable Contact Hours
Prerequisite: GERMN 152 or two years high school German

The student will learn additional structures and vocabulary of the target language and will continue practicing the four basic language skills: reading, writing, listening and speaking. Students will be introduced to authentic materials and literature. This course is a continuation of German 152. This course is a satisfier course for the Global Studies Degree Designation.

252 Second Year German II 4 Credit Hours
4 Billable Contact Hours
Prerequisite: GERMN 251 or three years high school German

The student will continue exploring authentic materials and literature. Practice of the four basic language skills—reading, writing, listening and speaking will continue at an advanced level. This course is a continuation of German 251. This course is a satisfier course for the Global Studies Degree Designation.

HEALTH SCIENCES (HLTSC)

110 Medical Terminology 2 Credit Hours
2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests

The purpose of this course, designed primarily for health and business students, is to provide basic medical terminology information including Greek and Latin derivations, prefixes, suffixes, root words and combining forms. It provides practice in building and defining medical terms, and the specific drug actions and interactions. The course is designed to introduce the major drug classifications, prototype and common drugs within those classifications, and the specific drug actions and interactions. The course also emphasizes the physiologic effects of drugs on the human body, identifying therapeutic usefulness, adverse effects and contraindications.

120 Pharmacology 3 Credit Hours
3 Billable Contact Hours
Prerequisite: BIOL 158 or admission to PN program

This course for nursing and allied health students is designed to introduce the major drug classifications, prototype and common drugs within those classifications, and the specific drug actions and interactions. The course also emphasizes the physiologic effects of drugs on the human body, identifying therapeutic usefulness, adverse effects and contraindications.

151 Principles of Nutrition & Diet Therapy 3 Credit Hours
3 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests

The purpose of this course is to study the role of nutrition in promoting health throughout the life cycle. Basic nutrition concepts are discussed, with emphasis placed on the nutrition needed for the maintenance of health and the prevention of disease. Personal nutritional practices are analyzed in light of nutritional theory.
HEALTH-PHYSICAL EDUCATION (HPE)

150 Personal Health 2 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F, W, Sp

This is a basic course designed to provide college students with fundamental concepts and practices relating to healthful living. Personal, local, state and national health problems are studied in an effort to provide the student with a broad knowledge and understanding of vital health issues as they impact on the physical, mental, emotional, spiritual and social well-being of the individual. Areas of health which are studied include: chemical dependency; cancer; heart disease and its related factors, such as exercise, nutrition, weight management and hypertension; and marriage, and family relationships. The critical thinking skill in this course will coincide with the student’s ability to think critically in order to solve problems related to the health, wellness and safety of individuals and society as a whole.

151 First Aid and Safety 2 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F, W, Sp

The First Aid and Safety course will provide the student with a basic knowledge and understanding of accidents, illness and injuries that most commonly occur at home, work, school, play or while traveling. The student is given opportunities to analyze specific emergency situations with emphasis on treatment, prevention and protection. Major areas include: wounds; injuries to muscles, bones and joints; shock; poisoning; burns; sudden illnesses; heart attacks; and respiratory emergencies. Rescue breathing, choking and CPR skills are learned and applied to adults, children and infants.

152 Mental Health 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS test
F, W, Sp

The purpose of this class is to develop a concept of mental health and to increase awareness of mental health issues. Students will examine the principles of mental health, including risk factors associated with mental illness and factors which lend toward positive mental health. Various mental illnesses and treatment strategies will also be explored. The education and roles of mental health professionals will be reviewed, as well as mental health facility options. Societal issues concerning mental health status will also be discussed.

153 Exercise Walking 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W

The purpose of the course is to provide students an opportunity to learn exercise walking skills and the knowledge and understanding of concepts related to those skills. Students will benefit from today’s emphasis on lifetime individual sport and recreational activities while receiving one-hour elective credit for either their associate’s degree or for personal enjoyment. This course is also transferable to many four-year institutions as a P.E. credit for those students seeking a baccalaureate degree.
171 Jogging 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, Sp, Su
Course content for physical fitness activities will include: section of clothing, equipment, terminology, basic fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn jogging skills and the knowledge and understanding of concepts related to those skills. Students will benefit from today’s emphasis on lifetime individual sport and recreational activities while receiving one-hour elective credit for either their associate’s degree or for personal enjoyment. This course is also transferable to many four-year institutions as a P.E. credit for those students seeking a baccalaureate degree.

173 Aerobics 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, W, Sp, Su
The purpose of this course is to introduce the student to aerobic exercise done to music and using various styles and equipment. Attire, terminology, health effects, and safety issues are discussed. Emphasis is on individual fitness needs, including increasing flexibility, toning, strengthening and cardiovascular improvement. Written and skills tests are a part of the course. A medical release may be required.

174 Tae Kwon Do 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
Sp, Su
The purpose of this class is to introduce the student to the martial art form of Tae Kwon Do. Tae Kwon Do is a Korean martial art that literally translates into “the way of kicking and punching” with proper attitude and concentration. Students practice Tae Kwon Do to learn mind and body control through unarmed self-defense techniques, discipline, and concentration.

175 Kick Boxing 1 Credit Hour 2 Billable Contact Hours
The purpose of the course is to help the participating student understand the art of the Karate term of KickBoxing, not only as a means to attain physical fitness and cardiovascular exercise, but also as a method of self-defense. Emphasis will be placed on physical fitness, self-discipline and self-defense. Involved are body movement principles, a progressive cardiovascular exercise program and other desirable health and technical aspects of the art of KickBoxing.

177 Weight Training 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, W
The purpose of this course is to provide students with an opportunity to learn weight training skills and the knowledge and understanding of concepts related to those skills. Course content will include: components of physical fitness, selection of clothing, equipment, terminology, fundamental weight lifting skills and safety. Written and/or skills tests are a part of the course. Weight training skills will be centered on using Nautilus/Stairmaster resistance exercise machines. Emphasis will be placed on increasing muscle tones and strength through a circuit routine of one set of 8-12 repetitions at 60-85 percent of one repetition max. Students’ strength and endurance will be assessed through a weight training program designed to meet class and personal objectives.

178 Weight Lifting 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, W
The purpose of this course is to provide students with an opportunity to learn weight lifting skills and the knowledge and understanding of concepts related to those skills. Course content will include: components of physical fitness, selection of clothing, equipment, terminology, fundamental weight lifting skills and safety. Written and/or skills tests are a part of the course. Weight training skills will be centered on using Hammer plated resistance equipment. Emphasis will be placed on increasing muscle size, power and strength through routines of three-to-four sets of three-to-four repetitions for each set at 85-100 percent of one repetition max. Student’s size, power and strength will be assessed through a weight lifting program designed to meet class and personal objectives.

181 Volleyball 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, W
Course content for physical fitness activities will include: section of clothing, equipment, terminology, basic fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn volleyball skills and the knowledge and understanding of concepts related to those skills. Students will benefit from today’s emphasis on lifetime individual sport and recreational activities while receiving one-hour elective credit for either their associate’s degree or for personal enjoyment. This course is also transferable to many four-year institutions as a P.E. credit for those students seeking a baccalaureate degree.
This course will allow students previously completing HPE 165, Karate, to proceed to an intermediate level. Continued emphasis will be placed on physical fitness, history of the art, self-discipline and self-defense. Involved are body movement principles, a progressive exercise program, and other desirable health and technical aspects of the art of karate.

Prerequisite: HPE 165

2 Billable Contact Hours

184 Basketball 1 Credit Hour
2 Billable Contact Hours

Prerequisite: ENLG 090 and RDG 090 or qualifying scores on ACT or COMPASS test

F, W

Course content for physical fitness activities will include: section of clothing, equipment, terminology, basic fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn basketball skills and the knowledge and understanding of concepts related to those skills. Students will benefit from today's emphasis on lifetime individual sport and recreational activities while receiving one-hour elective credit for either their associate's degree or for personal enjoyment. This course is also transferable to many four-year institutions as a PE credit for those students seeking a baccalaureate degree.

185 Snowboarding 1 Credit Hour
2 Billable Contact Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test

W

This course provides students an opportunity to learn snowboarding skills along with the knowledge and understanding of concepts related to snowboarding. Course content will include: selection of clothing and equipment, terminology, fundamental skills of snowboarding and safety. Written and/or skills tests are a part of this course. Students will benefit from the emphasis on individual lifetime sport and recreation activity while receiving one hour of credit toward a degree. This course meets off campus and will require significant physical effort. Students must be at least 18 years of age and be in good physical condition to participate.

193 Snow Skiing 1 Credit Hour
2 Billable Contact Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test

W

Course content for physical education activities will include: selection of clothing, equipment, terminology, fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn snow skiing skills and the knowledge and understanding of concepts related to snow skiing. Students will benefit from the emphasis on individual lifetime sport and recreation activity while receiving one hour elective credit for either their associate's degree or for personal enjoyment. This course is also transferable to many four-year institutions as a physical education credit for those students seeking a baccalaureate degree. Students should progress from basic snow skiing skills to intermediate level snow skiing or an appropriate level of skill determined by mutual student and faculty analysis.

265 Intermediate Karate 1 Credit Hour
2 Billable Contact Hours

Prerequisite: HPE 165

W, Sp, Su

This course will allow students previously completing HPE 165, Karate, to proceed to an intermediate level. Continued emphasis will be placed on physical fitness, history of the art, self-discipline and self-defense. Involved are body movement principles, a progressive exercise program, and other desirable health and technical aspects of the art of karate.

285 Intermediate Snowboarding 1 Credit Hour
2 Billable Contact Hours

Prerequisite: HPE 185

W

This course provides students an opportunity to improve and advance snowboarding skills learned in HPE 185 Snowboarding. Course content will start with a review of basics, such as selection of clothing and gear, terminology, the basic skills of snowboarding in theory and then practice. New, advanced skills of snowboarding will follow, along with a more sophisticated look at the sport. Written and performance based tests are a part of this course. Students will benefit from advanced training in an individual lifetime sport and recreational activity while receiving one hour of credit toward a degree. This course will require significant physical effort. Student must be at least 18 years of age and be in good physical condition to participate.

293 Intermediate Snow Skiing 1 Credit Hour
2 Billable Contact Hours

Prerequisite: HPE 193

W

Course content for physical education activities will include: selection of clothing and equipment, terminology, fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to advance snow skiing skills and the knowledge and understanding of concepts related to more advanced skiing. Students will benefit from today's emphasis on lifetime individual sport and recreational activities while receiving one hour elective credit for either their associate's degree or for personal enjoyment. This course is also transferable to many four-year institutions as a physical education credit for those students seeking a baccalaureate degree. Students should progress from basic snow skiing skills to intermediate level snow skiing or an appropriate level of skill determined by mutual student and faculty analysis.

100 Level — Activity Courses 1 Credit Hour

Course content for physical fitness and aerobic activities will include: selection of clothing and equipment, terminology, components of fitness, benefits of exercise, basic fundamental skills and safety. Course content for individual and team sports activities will also include rules of play, scoring and a basic understanding of offensive and defensive strategy. Written and/or skills tests are a part of each course.

Skills require some physical exertion, gross and fine motor coordination, and sufficient intellectual and emotional functions to implement skills and sufficient visual and auditory acuity to communicate needs in the activity. All students must sign a waiver to do activities, and a doctor's permit may be needed.

Please consult the latest class schedule for current information on offerings.
HISTORY (HIST)

151 Western Civilization to 1650 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course introduces the cultural and institutional development of Western civilization from its beginning to 1650. It emphasizes the contributions of past civilizations to the present. Students planning a major in history should elect to take both Western Civilization 151 and Western Civilization 152 in their freshman year. This course is a satisfier course for the Global Studies Degree Designation.

152 Western Civilization: 1650 to Present 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course, a continuation of Western Civilization 151, introduces the cultural and institutional development of post-1650 Western civilizations. Understanding the contributions these civilizations made to the present is emphasized. This course is a satisfier course for the Global Studies Degree Designation.

153 History of Michigan 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course is a survey of Michigan history from the French exploratory period to the present. It will examine how the economic, political and social development of Michigan relates to American history. Local history and the collection and interpretation of primary historical materials are emphasized. This includes utilizing primary historical materials and fitting this information into a local and a national context.

154 History of the U.S.: 1607-1877 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course is a survey of American history from the time of exploration and the Colonial Era to the end of Reconstruction. It will examine the institutions of the peoples of America—native and immigrant—and the changes fashioned in the new environment. Special emphasis is placed on the growth and development of American democracy. The purpose of this course is to have the student understand the complexity and essential content of the American past.

155 History of the U.S.: 1877-Present 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course is a survey of American history from the end of Reconstruction to the present. It will examine industrialization; urbanization; ethnic and racial diversity; economic conditions; political, social, cultural and intellectual trends; the growth of America as a world power; the Cold War; and the growth of the federal government. The purpose of this course is to have the student understand the historical roots of modern America.

158 World History to 1500 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course introduces the social, economic and cultural development of world history from its beginning to 1500. It emphasizes the formation of world empires and imperialism, contours of world religions and the movement of goods and people from a comparative perspective. This course is a satisfier course for the Global Studies Degree Designation.

159 World History: 1500 to Present 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course introduces the social, economic and cultural development of world history from 1500 to the present. It gives a comparative overview of the movement of goods and people, revolutions, technological developments and new regional and public identities in the modern world. This course is a satisfier course for the Global Studies Degree Designation.

160 Civil War and Reconstruction 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course is a survey of the Civil War era in U.S. history. Special emphasis is on modernization, slavery, the causes of the war, the military aspects and the reconstruction process.
HUMANITIES (HUMAN)

151 Introduction to Humanities 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F, W
This course focuses on what the humanities reveal about human values. Throughout the semester students will be encouraged to explore the impact of the humanities on society and the forces which have influenced the humanities through history. This is a course to initiate students in the study of drama, art, sculpture, architecture, and music as well as one or more of the other humanities. In particular, students will learn the proper vocabulary to discuss these genres. In addition, students will examine methods of evaluating and critiquing works of art. Attending live performances and museum exhibitions will, whenever possible, be part of the course. This course is a satisfier course for the Global Studies Degree Designation.

173 20th Century History and Civilization 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F
This course provides the necessary background to understand today's important global events, especially interactions between the industrial world and developing world cultures. This course examines developments in art, science, technology, economics, society, politics and religion. Completing this course provides students with the ability to identify the most important individuals and ideologies of history since the 20th century and discuss the causes and effects of the era's most important events. Students will have a better understanding of the cultural and ideological sources of nationalism, imperialism, militarism, globalization, as well as the causes and effects of international forms of violence. This course is a satisfier course for the Global Studies Degree Designation.

255 History of East Asia 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F
This course surveys the history of East Asia from its beginning to modern times. It emphasizes the social, political and economic institutions that have shaped the civilization of this region. This course is a satisfier course for the Global Studies Degree Designation.

256 African-American History 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F
This course examines the history of African-Americans from their African origins to the present. Special emphasis is placed on the cultural development and contributions of black Americans and the ever-changing dimensions of racism and discrimination in American society. This course will help the student understand the integral role that African-Americans have played in our nation's history, and to perceive that the very foundation of the American experiment rests on cultural diversity.

152 Exploring Creativity 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F, W
This class will examine, in detail, the creative process and the factors that surround it. Beginning with the trilogy of creation--the person, the process and the product--the course will explore those characteristics of creative people that enhance creativity and also those elements that inhibit it. The class will be based on the experiences of those who are productive creators. We will note their thinking and feeling habits, examine their products, discover their processes and understand how creativity is part of everyone. Creative and lateral thinking processes will also be explored. A creativity project will be presented to the class by each student.

256 Film & American Society: 20th to Early 1960s 3 Credit Hours
Prerequisite: ENGL 151
F
This course is a chronological survey of the development of American cinema from the 1920s through the early 1960s. Changes in the productive forces and social relations will be identified and discussed in terms of their influence on the kinds and content of movies produced in the United States during this period. At the same time, this course will explore the various ways in which filmmakers adapted to and/or criticized these same influences.

257 Film & American Society: 1960s to Present 3 Credit Hours
Prerequisite: ENGL 151
W
This course is a chronological survey of the development of American cinema from the mid 1960s to the present. Changes in the productive forces and social relations will be identified and discussed in terms of their influence on the kinds and content of movies produced in the United States during this period. At the same time, this course will explore the various ways in which filmmakers adapted to and/or criticized these same influences.

INDEPENDENT STUDY

1 to 4 credit hours
Prerequisite: Approval of the respective Division Dean.

A student may have an interest in a topic or an area of specialization not covered by regular MCCC class offerings. In order to further the student's learning in these areas, the divisions (Applied Sciences and Technology, Business, Health Sciences, Humanities/Social Sciences and Science-Mathematics) may offer an Independent Study class in which the student would complete selected readings, research projects and/or papers under the guidance of an instructor.
**INFORMATION ASSURANCE AND SECURITY (IAS)**

**103 Information Security Principles** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests*  
*Corequisite: CIS 130*

This course provides an introduction and overview of information security/assurance for incoming students. This course will enhance technical, communication, problem solving and teaming skills, as they relate to the study of Information Security and Information Assurance. This course will also cover a broad spectrum of pertinent IS/IA base information, including voice and data network connectivity. In addition an introduction to cryptography, intrusion detection systems, data firewalls, malicious software, information operations and warfare, and denial of service attacks, regulations, law and governance.

**105 Computing and Social Responsibility** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests*

This course combines extensive exploration of ethical issues faced by everyday computer users with hands-on practice using a broad variety of online and computer productivity tools to support socially responsible computer use.

**202 Risk Vulnerability Analysis** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: IAS 103 or CIS 216*

This course covers tools, techniques and methodologies in performing computer system and network security vulnerability risk analyses. Security best practices and audit requirements for specific environments will be studied. Topics to be covered include internal and external penetration tests, wireless security technology, risk analysis methodology and security audits. The purpose of this course is to provide undergraduate level students with an educational experience in the application of risk management theory and principles to information security policy, information systems computer and network facilities, and the life cycle development process.

**210 Advanced Networking Practices** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: CIS 209*

This course will cover concepts and functions of networks and related business technology. The course emphasizes administration client/server and peer-to-peer networks. The course includes description of equipment, networking procedures and protocols. It will also include installing, configuring and troubleshooting a computer network. It then provides coverage of the most important concepts in contemporary networking, such as TCP/IP, Ethernet, wireless transmission and security. The course will prepare students for selecting the best network design, hardware and software for the application or environment.

**213 Privacy and Technology** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: CIS 216 or IAS 103*

This course prepares students to recognize, analyze and manage privacy challenges created by technology. Both business and self-regulatory efforts will be reviewed.

**JOURNALISM (JOURN)**

**161 Introduction to Journalism** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests*  
*F, W*

Students in this course will learn how to determine what is newsworthy, as well as the basics of news and feature writing, journalistic style, copy editing and gathering of information with an emphasis on interviewing techniques. Students may hear presentations by professional journalists and/or visit a newspaper operation.

**162 Journalism Workshop I** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: JOURN 161*  
*F, W*

In this course, students will be given practical experience in journalistic writing, photography, layout procedures and newspaper production. They will have the responsibility for producing the college newspaper, The Agora.

**181 New Media Journalism** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: JOURN 161*

This course is designed to introduce students to the wide variety of digital story-telling tools. As consumers turn from traditional news sources to the World Wide Web, journalists need to learn a new portfolio of skills, from handling breaking news in real time to blogs, tweets, podcasts, video, audio, multi-media, linking, geocoding and more. Students will be exposed to a wide range of digital news presentation methods, while learning new media skills needed to compete in this rapidly changing and highly competitive career field. The course will emphasize using traditional journalism conventions, such as accuracy, fairness and comprehensive news gathering and reporting, while using digital new media tools.

**251 Photojournalism** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests*  
*F*

This course is an introduction to the basic principles and practices of photojournalism, as it is practiced at newspapers, magazines, and online media. The emphasis will be on using still and video photography to tell stories and provide information. It will cover the basics of photography skills, from exposure and composition to digital editing and caption writing. The history and ethics of photojournalism also will be covered, as well as the impact of new technology and emerging fields in photojournalism. Students will develop a digital portfolio of images, and may cover news and feature assignments for the student newspaper and website.

**261 Journalism Workshop II** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: JOURN 162*  
*F, W*

This course is a continuation of Journalism 162.

**262 Journalism Workshop III** 3 Credit Hours 3 Billable Contact Hours  
*Prerequisite: JOURN 261*  
*F, W*

This course is a continuation of Journalism 261.
Materials Technology (Matl)

101 Industrial Materials 3 Credit Hours
Prerequisite: One year high school algebra or MATH 090 or qualifying score on ACT or COMPASS tests

This course presents an introduction to materials of industry, including iron and steel, nonferrous metals, plastics and ceramics, from the standpoint of properties and applications. Major topics include material classification, mechanical and physical properties, metallurgy and heat treating. Laboratory experience will be gained in mechanical testing, microscopy, heat treating and materials identification.

121 Nuclear Plant Materials 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

This is an introductory course on materials for nuclear power plants. The major topics include the atomic structures, phase diagrams, types and classification of alloys, mechanical properties with emphasis on the brittle fracture, effect of environment on the degradation of properties and how to evaluate the safe working stresses. Plant material problems and selection of appropriate materials for various components will also be discussed. Laboratory experience will be gained in mechanical testing, microscopy, corrosion testing, etc.

215 Metallurgy 3 Credit Hours
Prerequisite: MATL 101

This course builds on the foundation of Industrial Materials (MATL 101) to explore, in-depth, the physical and mechanical properties of metals and alloys. Laboratory work will include industrial metallographic techniques and metals testing.

225 Plastics and Ceramics 3 Credit Hours
Prerequisite: MATL 101

This course builds on the foundation of Industrial Materials (MATL 101) to explore, in-depth, the physical and mechanical properties of plastics and ceramics. Laboratory work will include processing and testing techniques of polymers, composites and ceramics.

Mathematics (Math)

Students who score below specified minimums on the ACT or COMPASS math placement test must successfully complete MATH 090 prior to enrolling in a 100-level or higher math course.

090 Basic Mathematics Skills 3 Credit Hours
Prerequisite: This class does not count toward graduation

Basic Mathematics Skills will provide instruction in elementary arithmetic skills and mathematical operations and their applications, with early introduction to integers and algebraic concepts. This approach provides students with the necessary tools to succeed in developmental math and prepares them for future math courses. The content of the course includes operations with whole numbers, whole-number and decimal fractions, ratio and proportion, percent, introduction to variables and algebraic concepts, emphasis on problem-solving skills, vocabulary comprehension, real-world applications and calculator fundamentals. Some topics must be completed without the use of a calculator. The purpose of the course is to prepare students for the transition from arithmetic to algebra. The Basic Mathematics Skills course will be graded on a pass/fail mastery basis. The institutional credits earned in this course do not count toward graduation. This course does not fulfill the math competency requirements. Internet access is mandatory.

092 Beginning Algebra 4 Credit Hours
(formerly MATH 150)
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests

Formerly MATH 150, this course covers fundamental concepts of algebra factoring and solutions to linear equations. It also includes solutions of rational equations, quadratic equations and systems of equations. This course is intended for students who have had no high school algebra or feel a need to review elementary algebra. Internet access is mandatory. The institutional credits earned in this course do not count toward graduation. This course does not fulfill the math competency requirements.

119 Elementary Technical Mathematics 2 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests

This course provides basic mathematics preparation for students in technology programs. It emphasizes fundamental operations of algebra and the solution of linear equations relating to technical applications. The course also includes estimation, scientific and engineering notation, proportion and variation, measurement systems and conversion methods, precision, accuracy and error. The purpose of this course is to acquaint students with the type of mathematics that is used in the technical area.

124 Technical Mathematics II 4 Credit Hours
Prerequisite: MATH 119

This course is designed to provide advanced mathematics preparation for students in technology programs. It emphasizes concepts and applications of algebra, geometry and trigonometry to technical areas. The course includes geometry, graphs and charts, functions and graphs, trigonometry, vectors and polar coordinates, systems of equations, logarithms and statistics.
125 Mathematics for Allied Health 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests

This course covers practical application of addition, subtraction, multiplication, division, decimals, fractions, conversion of units, ratio and proportion problems, estimation (including reasonableness of numerical result), precision, accuracy, variation, measurement systems, conversion methods, review of the Roman numeral system, use of algebraic formulas and solving algebraic word problems as related to the medical profession. The purpose of this course is to give the student competency in the mathematics used in the medical profession. Calculator use will not be permitted in this course.

126 Mathematics for Business 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 092 or qualifying scores on ACT or COMPASS tests

This is an algebra-based business mathematics course emphasizing applications to problems in accounting and finance. Topics include payroll, taxes, markup, interest, loans annuities, depreciation, stocks and bonds. Technology will be utilized to assist students with the calculations.

151 Intermediate Algebra 4 Credit Hours
4 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests

This course covers properties of real numbers, solutions of first- and second-degree polynomial equations and inequalities, systems of equations and their graphs, basic properties of logarithms, complex numbers, basic right triangle trigonometry and laws of sines and cosines. The purpose of this course is to prepare students for the transition to college algebra.

154 Mathematics Explorations 4 Credit Hours
4 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS tests

This is a college-level course designed primarily for non-math and non-science transfer majors with the purpose of introducing them to the nature of mathematics as it applies to both the practical and the abstract. Students will gain understanding in the areas of sets, logic, probability, statistics, algebra, geometry and math as they apply to the modern world. The history and the future of mathematics will be interspersed throughout the course as they apply to each topic. Topics will be explored with the use of computers, problem solving, critical thinking and group/self-discovery.

156 Math for Elementary Teachers I 3 Credit Hours
3 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS tests

This course is an introduction to the theory of arithmetic to develop understanding and skill in mathematical processes. It consists of set theory, logic, number bases, properties of natural numbers, integers, and rational and real numbers. An emphasis is put on the use of manipulatives and problem solving. The purpose of the course is to provide the future elementary teacher with a perspective for understanding the mathematics taught in the elementary school.

157 College Algebra 3 Credit Hours
3 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS tests

This course covers the topics of polynomial equations, inequalities, exponential equations and logarithmic equations. Also included are systems of equations and complex numbers. The purpose of this course is to introduce students to college-level mathematics at a more gradual pace than MATH 164. MATH 157 and MATH 159 are the equivalent of MATH 164.

159 Trigonometry and Analytical Geometry 3 Credit Hours
3 Billable Contact Hours
Prerequisite: MATH 157

This course covers the topics of circular functions, trigonometric functions, inverse trigonometric functions, trigonometric identities, conic sections, polar coordinates, sequences and induction. The purpose of this course is to teach students trigonometry and conic sections so that the students will have the prerequisites needed for the study of calculus. MATH 159 is a continuation of MATH 157. MATH 157 and MATH 159 are the equivalent of MATH 164.

160 Math Applications in Engineering Technology 2 Credit Hours
3 Billable Contact Hours
Prerequisite: MATH 124 or MATH 159 or MATH 164

This course is an introduction to the concepts of statistics and calculus as they apply to engineering technology, focusing on the application of spreadsheet and math analysis software. Computer resources provided include Microsoft Excel and the Maple computer algebra packages. Topics range from experimental data reduction to numerous examples from mechanical and electrical systems.

162 Introduction to Statistics 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 124, MATH 126 or MATH 151 or 157 or 159 or 164 or 171 or 172 or 251 or 271 or 273 or qualifying score on ACT or COMPASS tests

A basic course to acquaint the student with the theory and application of statistical methods to engineering, health, social and business problems. Topics considered are graphical representation of data, central tendency measures, bivariate data, probability, distribution, sampling, hypothesis testing and correlation aspects. Out of classroom use of microcomputers will be expected.

164 Precalculus 4 Credit Hours
4 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS tests

This course emphasizes the study of polynomial, exponential, logarithmic and trigonometric functions. Other topics considered are complex numbers, trigonometric identities, systems of equations and analytic geometry. The purpose of this course is to provide knowledge and skills in mathematics of advanced algebraic and trigonometric concepts for applications in situations that require the use of quantitative processes. This course serves as a core requirement in many baccalaureate programs and provides prerequisite concepts and skills needed in business, mathematics, engineering and in the physical sciences for continued study in calculus.
166 Math for Elementary Teachers II 3 Credit Hours
Prerequisite: MATH 156
This course is a study of elementary probability and statistics, geometry, computer and calculator applications. An emphasis is put on the use of manipulatives and problem solving. The purpose of this course is to provide the future elementary school teacher with a perspective for understanding the mathematics taught in the elementary school.

171 Calculus I 4 Credit Hours
Prerequisite: MATH 159 or MATH 164 or qualifying score on ACT or COMPASS tests
An introductory course in the study of single variable calculus covering both differentiation and integration. The types of functions covered include algebraic and transcendental. The purpose of the course is to study analysis of single variable functions primarily through differentiation and integration.

172 Calculus II 4 Credit Hours
Prerequisite: MATH 171
This course is a continuation in the study of calculus with an emphasis upon integration. Topics included are algebraic and transcendental functions, techniques of integration, improper integrals, infinite series, plane analytic geometry, parametric equations and polar equations. The purpose of the course is to continue the study of calculus of single variable functions with a more in-depth study of integration and various infinite series.

251 Introduction to Linear Algebra 3 Credit Hours
Prerequisite: MATH 171
This course is an introduction to linear algebra. The content of the course includes methods for solving systems of equations, matrices, vector spaces, inner product spaces, eigenvalues and eigenvectors and linear transformations. The purpose of this course is to introduce students to linear algebra. Specifically, the course prepares students to work with abstract mathematical structures and multivariate problems.

271 Calculus III 4 Credit Hours
Prerequisite: MATH 172
Calculus III is the continuation of the principles of calculus applied to multivariable functions. The content of the course includes partial differentiation, multiple integration and vector analysis. The purpose of the course is to continue the analysis of functions with calculus to multivariable functions.

273 Introduction to Differential Equations 3 Credit Hours
Prerequisite: MATH 172
This is an introduction to ordinary differential equations. The content of the course includes methods for solving first- and second-order ordinary differential equations, systems of differential equations, power series solutions and Laplace transforms. The purpose of this course is to introduce students to the theory and application of differential equations. Specifically, the course prepares students to apply differential equations to scientific, engineering and economic problems.

MECHANICAL DESIGN TECHNOLOGY (MDTC)

109 Mechanical Blueprint Reading 2 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
This course covers the basic principles essential for interpretation of blueprints and engineering drawings. Fundamental symbols, signs and techniques, as well as size and shape description, are emphasized.

116 Plant Layout and Material Handling 3 Credit Hours
Prerequisite: MDTC 101 or MDTC 109 or MDTC 151 or MDTC 160 or MDTC 161
This course is an introduction to the practices and procedures for developing optimum plant layouts for production and material handling. Students will follow the process of analyzing and developing information to produce a plant layout. Print reading skills will be developed with an emphasis on reading industrial equipment drawings for equipment installation and movement of materials including conveyors.

152 Descriptive Geometry 4 Credit Hours
Prerequisite: MDTC 160 or MDTC 151
This course consists of lectures, discussions, and home and classroom drawings. Major topics and applications will include: fundamental theory of the point, line and plane with application to solids, generation and classification of lines and surfaces, tangent planes, sections, intersections, development and applications to engineering problems.

160 Mechanical Drafting and CAD I 4 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
This course is a first exposure to the drafting and design field. Orthographic projection, dimensioning, sectioning, tolerancing, threads and fasteners, and assembly drawings will be taught using both sketching techniques and Computer Aided Drafting (CAD) software. A major emphasis will be placed on current drafting standards and procedures.

161 Mechanical Drafting and CAD II 4 Credit Hours
Prerequisite: MDTC 160 or MDTC 101 or MDTC 121 or two years high school mechanical drafting and CAD. Students who have taken MDTC 151 and MDTC 122 should not take MDTC 161.
This course is designed as a continuation of the Mechanical Drafting and CAD I course. Auxiliary views, fasteners, pictorial drawings and working drawings will be taught using both sketching techniques and computer aided drafting (CAD) software.
224 CAD Applications-Mechanical  3 Credit Hours
4 Billable Contact Hours
Prerequisite: MDTC 121 and MDTC 101 or MDTC 151 or MDTC 160 and MDTC 161

This course focuses on the process of interpreting complex engineering drawings and developing the detail drawings which are used in manufacturing parts. The course is designed to simulate the engineering environment from a detailer’s perspective and provide application-based drawings/projects commonly found in industry. The projects will consist of detail drawings made from solid details, casting details and weldment details. This course will pull together the skills acquired in MDTC 160 and MDTC 161 and will enable the student to develop and critique their research skills. CAD lab is required to complete drawings.

226 Geometric Dimensioning  3 Credit Hours and Tolerancing  3 Billable Contact Hours
Prerequisite: MDTC 101 or MDTC 151 or MDTC 160

This course covers fundamental concepts and applications relating to geometric dimensioning and tolerancing (GD&T). This includes tolerance of form, profile, orientation, runout and location as they relate to the ASME Y14.5-2009. Emphasis is placed on how GD&T is utilized by engineering, manufacturing and inspection departments.

228 Introduction to SOLIDWORKS-  3 Credit Hours CSWA  4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying score on ACT or COMPASS tests.

The Solid Modeling-SOLIDWORKS course is designed for SOLIDWORKS students, designers and engineers. This course is the first step toward becoming a proficient SOLIDWORKS user. It covers the core concepts of 3D parametric modeling, common part design, assembly creation, and drawing generation. Additionally, the course is designed to help users prepare and successfully pass the Certified SOLIDWORKS Associate (CSWA) exam.

232 Advanced SOLIDWORKS-CSWP  3 Credit Hours 4 Billable Contact Hours
Prerequisite: MDTC 228

The Advanced SOLIDWORKS-CSWP course teaches students how to design and analyze parametric parts and moveable assemblies using a variety of complex features in SOLIDWORKS. Advanced part modeling, advanced assembly modeling, sheet metal, and weldments are covered. Additionally, the course is designed to help students prepare and successfully pass the Certified SOLIDWORKS Professional (CSWP) exam.

240 Tool and Die Design  4 Credit Hours
6 Billable Contact Hours
Prerequisite: MDTC 152 and MDTC 226 and MDTC 228

Keeping pace with the latest advances in jigs and fixtures, this course covers thoroughly how and why jigs and fixtures are designed and built. From simple template and plate-type workholders to complex channel and box-type tooling, economy and simplicity in tool design is stressed throughout. This course is also a step-by-step introduction to the design of stamping dies including material, punches, die sets, stops, strippers, gages, pilots and presses. Special attention is given to the use of standard parts catalogs. The function of the course is to call upon the knowledge and skills acquired by the student in supporting and related courses to analyze and solve specific design problems. CAD lab is required to complete drawings. Students who have successfully completed both MDTC 229 and MDTC 230 may not enroll for credit in this course.

242 Mechanical Design  4 Credit Hours
6 Billable Contact Hours
Prerequisite: MDTC 226 and MDTC 228

This course is a capstone experience for the final semester of the associate degree in mechanical design technology. Students will demonstrate the collected knowledge, skills and techniques acquired in previous courses by creating and presenting a representative design project to a panel of their peers, instructors and representatives from industry. Emphasis is placed on the use of design principles and computer technology in planning, managing and completing a design project. Team design projects will be integrated into the course.

MECHANICAL ENGINEERING TECHNOLOGY (METC)

100 Introduction to Engineering  3 Credit Hours & Technology  3 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

This course introduces the field of engineering and technology. Concepts related to the engineering profession are presented, including economics, ethics, research, problem solving, communication and typical engineering problems. A major component of this course includes presentation of mathematical and scientific tools that have utility in future engineering courses and the engineering career, including computer software. Historic examples are used throughout the course to demonstrate the typical problems that were successfully solved, as well as engineering failures, and the impact of technology on society. Students are encouraged to communicate and collaborate with each other on problems. Group work is required, as well as participation in the course’s discussion forum. The end goal of the course is to give the student a feel for the engineering experience.

170 Introduction to Parametric  3 Credit Hours CAD/CATIA  6 Billable Contact Hours
Prerequisite: MDTC 121 or MDTC 160

In this course, students learn concepts in the use of profiles and parametric features as building blocks for 3D solid models, using the CATIA/DELMIA part and assembly modeling software. Advanced topics of NURBS surfacing and assemblies, as well as the creation of 2D drawings will be discussed. Software specific topics of Boolean Operations and best practices will also be explored.
172 Computer Aided Design 4 Credit Hours
UG/NX 6 Billable Contact Hours
Prerequisite: MDTC 121 or MDTC 160 or equivalent W

In this course, students learn concepts in the use of profiles and parametric features as building blocks for 3D solid models using the UG/NX part and assembly modeling software. Advanced topics of NURBS surfacing and assemblies, as well as the creation of 2D drawings will be discussed. An analysis of models using Finite Elements Analysis (FEA) tools will be attempted, time permitting.

180 Statics 1 Credit Hour
2 Billable Contact Hours
Prerequisite: MATH 124 or MATH 159 or MATH 164 F, W

This course is an introduction to the concepts of vector resultant and equilibrium of coplanar force systems, solution of truss problems by method of joints and method of sections, and calculation of static friction. The course is intended to expand on the related material from METC 208 Strength of Materials (which includes determination of area centroids and moments of inertia).

208 Strength of Materials 3 Credit Hours
3 Billable Contact Hours
Prerequisite: MATH 124 or MATH 151 or higher F, W

This course is concerned with the selection of machine and building members of adequate strength and rigidity and the investigation of existing load carrying members. Consideration is given to economy of weight and cost. Topics covered include: stress, strain and deflection calculations, shafts, centroids and moments of inertia, beams and columns, Mohr’s circle and combined stress. Computer software resources will be available to assist students in completion of homework assignments.

210 Computer Applications in 4 Credit Hours
Machine Design 6 Billable Contact Hours
Prerequisite: MATH 160 and METC 170 and METC 208. NOTE: METC 220 will replace METC 180 and 208

This course covers the application of the principles of engineering mechanics (stress/strain, impact, dynamic loading and fatigue) through computer analysis to the design and/or selection of machining elements. Components discussed include fasteners, springs, bearings, belt and chain drives, brakes and clutches, power screws and gears. Students are exposed to use of CAD to model designs, FEA stress verification and a variety of math tools to reproduce equations from industry handbooks and component supplier guides.

220 Statics & Strength of Materials 4 Credit Hours
6 Billable Contact Hours
Prerequisite: MATH 124 or MATH 151 or MATH 157 or MATH 160 or MATH 164 or MATH 171 or MATH 172 or qualifying score on COMPASS or ACT tests F, W

This course introduces basic statics concepts for determining forces acting on rigid bodies. Concepts of vector resultants, equilibrium of coplanar force systems, solution of truss problems by method of joints and method of sections, and calculation of static friction are included. Supporting concepts of centroids and moment of inertia are introduced. The course then covers strength of materials subjects of normal and shear stress, strain, thermal stresses, stress concentration factors, factor of safety, torsion and power transmissions via shafts. Advanced topics include beam bending diagrams, beam deflection, combined stresses and Mohr’s circle. All coursework is based on real-world examples and includes use of computer software where appropriate.

234 Thermodynamics and Fluid Sciences 4 Credit Hours
6 Billable Contact Hours
Prerequisite: MATH 124 or MATH 160 or MATH 164 or MATH 157 and MATH 159 W

This course presents the fundamental concepts of thermodynamics and heat transfer. The focus is on industrial applications and their basis in thermodynamic theory. Included are heat capacity, phase changes, thermal cycles, efficiency, power generation and refrigeration. Lab exercises will demonstrate concepts, with computer simulations used to demonstrate where physical equipment is impractical for the classroom. In addition, fluid flow characteristics are presented where related to heat exchanger performance.

270 Advanced Parametric CAD 3 Credit Hours
4 Billable Contact Hours
Prerequisite: METC 170

This course provides the dual opportunities to explore advanced topics in parametric CAD and to gain valuable design experience through its application to a team-based project. Topics begin with a brief review of the introductory course, METC 170. Participants will then choose to either complete a minimum of 10 additional topic modules through the use of tutorial exercises or to form teams that together will share these topic modules while applying the knowledge gained to a semester-long design project. A partial list of topics include top-down assembly modeling, surfacing, dynamic analysis of mechanisms, rendering and animation, sheet metal and plastics design techniques and fundamentals of Finite Element Analysis. The software of choice is currently CATIA-DELMIA, and students are encouraged to purchase student editions and to have a reliable Internet connection to enroll.
MUSIC (MUSIC)

150 Agora Chorale 1 Credit Hour
Prerequisite: MUSIC 150

3 Billable Contact Hours

The Agora Chorale is a mixed vocal ensemble comprised
of singers from the community and college. The Chorale
presents concerts, no less than two each semester, both on
and off campus. The class meets one evening each week
and may be elected in sequence four times. The course is a
requirement for students on a choir scholarship.

151 Agora Chorale 1 Credit Hour
Prerequisite: MUSIC 150

3 Billable Contact Hours

The Agora Chorale is a mixed vocal ensemble comprised
of singers from the community and college. The Chorale
presents concerts, no less than two each semester, both on
and off campus. The class meets one evening each week
and may be elected in sequence four times. The course is a
requirement for students on a choir scholarship.

152 Voice Class 2 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying
scores on ACT or COMPASS tests

2 Billable Contact Hours

This course is open to all students who wish to improve their
singing abilities.

154 College-Community Symphony Band 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying
scores on ACT or COMPASS tests

3 Billable Contact Hours

The College-Community Symphony Band is open to
instrumentalists having previous music experience.
Membership includes college students and citizens from the
community. The band performs for college functions and
concerts as well as for community programs. Admission is
by application and audition to the director. This course is a
requirement for students on a band scholarship. The band
rehearses once each week, and the course may be elected in
sequence four times.

155 College-Community Symphony Band 1 Credit Hour
Prerequisite: MUSIC 154

3 Billable Contact Hours

The College-Community Symphony Band is open to
instrumentalists having previous music experience.
Membership includes college students and citizens from the
community. The band performs for college functions and
concerts as well as for community programs. Admission is
by application and audition to the director. This course is a
requirement for students on a band scholarship. The band
rehearses once each week, and the course may be elected in
sequence four times.

157 Listening to Classical Music 2 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying
scores on ACT or COMPASS tests

2 Billable Contact Hours

This class is designed for people seeking greater awareness
of the aesthetic content of “classical” music. The forms,
styless, methods of composition and composers are
discussed and analyzed as a basis for intelligent listening
and appreciation.

161 Applied Music Instrument 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying score
on ACT or COMPASS tests

1 Billable Contact Hour

F, W

This course provides private lessons in piano, guitar, wind
or percussion instruments (providing qualified teachers are
available). The student will be assigned a teacher with whom
he/she will study. One half-hour lesson will be attended each
week. The student will pay the teacher directly for each
lesson. At the end of the semester, each student will perform
in a recital. The course may be elected as a humanities or
elective credit four times in sequence. A permission slip is
required to register. The purpose of this course is to improve
the student’s ability to perform musically.

161V Applied Music Voice 1 Credit Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying score
on ACT or COMPASS tests

1 Billable Contact Hour

F, W

This course provides private lessons in voice (providing
qualified teachers are available). The student will be assigned
a teacher with whom he/she will study. One half-hour lesson
will be attended each week. The student will pay the teacher
directly for each lesson. At the end of the semester, each
student will perform in a recital. The course may be selected as a humanities or
elective credit four times in sequence. A permission slip is
required to register. The purpose of this course is to improve
the student’s ability to perform musically.

162 Applied Music Instrument 1 Credit Hour
Prerequisite: MUSIC 161I

1 Billable Contact Hour

F, W

This course provides private lessons in piano, guitar, wind
or percussion instruments (providing qualified teachers are
available). The student will be assigned a teacher with whom
he/she will study. One half-hour lesson will be attended each
week. The student will pay the teacher directly for each
lesson. At the end of the semester, each student will perform
in a recital. The course may be selected as a humanities or
elective credit four times in sequence. A permission slip is
required to register. The purpose of this course is to improve
the student’s ability to perform musically.

162V Applied Music Voice 1 Credit Hour
Prerequisite: MUSIC 161V

1 Billable Contact Hour

F, W

This course provides private lessons in voice (providing
qualified teachers are available). The student will be assigned
a teacher with whom he/she will study. One half-hour lesson
will be attended each week. The student will pay the teacher
directly for each lesson. At the end of the semester, each
student will perform in a recital. The course may be selected as a humanities or
elective credit four times in sequence. A permission slip is
required to register. The purpose of this course is to improve
the student’s ability to perform musically.
This course is highly suggested for future elementary teachers but open to all students. The instructor assumes the students have not had previous formal music instruction. The course covers basic knowledge and skills needed to incorporate music into the regular classroom as well as methods of using music to enhance teaching of academic subjects. Mandatory off campus student teaching assignments are required.

Music Theory I will examine the basic knowledge and skills of music theory in order that the student can understand and analyze musical compositions, write music in several classical styles and transcribe music played on a keyboard. The knowledge that the course will teach includes understanding the concepts and experiencing aurally the following: pitches, intervals, all types of triadic and seventh chords, voice leading, cadences and musical form. The ability to read and express music obtained from prior formal music instruction is essential for success in this course.

This course provides private lessons in voice (providing qualified teachers are available). The student will be assigned a teacher with whom he/she will study. One half-hour lesson will be attended each week. The student will pay the teacher directly for each lesson. At the end of the semester, each student will perform in a recital. The course may be selected as a humanities or elective credit four times in sequence. A permission slip is required to register. The purpose of this course is to improve the student's ability to perform musically.

This course provides private lessons in piano, guitar, wind or percussion instruments (providing qualified teachers are available). The student will be assigned a teacher with whom he/she will study. One half-hour lesson will be attended each week. The student will pay the teacher directly for each lesson. At the end of the semester, each student will perform in a recital. The course may be selected as a humanities or elective credit four times in sequence. A permission slip is required to register. The purpose of this course is to improve the student's ability to perform musically.

This course provides private lessons in voice (providing qualified teachers are available). The student will be assigned a teacher with whom he/she will study. One half-hour lesson will be attended each week. The student will pay the teacher directly for each lesson. At the end of the semester, each student will perform in a recital. The course may be selected as a humanities or elective credit four times in sequence. A permission slip is required to register. The purpose of this course is to improve the student's ability to perform musically.

This course provides private lessons in piano, guitar, wind or percussion instruments (providing qualified teachers are available). The student will be assigned a teacher with whom he/she will study. One half-hour lesson will be attended each week. The student will pay the teacher directly for each lesson. At the end of the semester, each student will perform in a recital. The course may be selected as a humanities or elective credit four times in sequence. A permission slip is required to register. The purpose of this course is to improve the student's ability to perform musically.
265 History and Appreciation of Jazz 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests.

The emphasis of Music 265 is on the various styles of jazz that have shaped the history of jazz music from its roots in blues and ragtime to its inception as a distinct musical form and its evolution through to the present time. This will include dixieland, swing, bebop, cool and fusion. The course will also examine jazz within its historical and sociological contexts. The purpose of this course is to expand students' knowledge of a musical style indigenous to America that has helped to shape the nation's cultural history.

266 History of Rock Music 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests.

Music 266 will examine various styles of rock music, from its roots in blues, rhythm and blues and country to its inception as rock and roll and through various styles that have been popular through the late 1960s. This will include early rock and roll pioneers, folk-rock, the surf sound, the Motown sound, the British invasion and psychedelia. When possible, references and comparisons to more contemporary styles will be made. Styles and genres studied will be examined from a historical and sociological perspective.

268 Popular Music in America 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests.

The emphasis of Music 268 is upon the various styles of music that have been popular throughout America's history from the colonial period to the present. This will include folk, blues, jazz, country and rock. This course will also examine these musical styles from a sociological and historical perspective. The purpose of this course is to expand students' knowledge of styles of music that have been an integral part of America's cultural history.

NUCLEAR ENGINEERING TECHNOLOGY (NUET)

100 Nuclear Industry Fundamentals 2 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 151 or 157 or 159 or 164 or 171 or 172 or 251 or 271 or 273 or qualifying score on ACT or COMPASS tests.

This course presents fundamental principles used throughout the nuclear industry as an essential part of daily operations. Focus areas include Introduction to Nuclear Power Plants, Human Performance Enhancement Fundamentals, Introduction to the Systematic Approach to Training (SAT), conduct of On the Job Training (OJT), Task Performance Evaluation (TPE), Foreign Material Exclusion (FME) and overview of a corporate safety manual, the concept of the Safety Conscience Work Environment, Conservative Decision Making and Next General/Generation IV Reactors.

102 Introduction to Non-Destructive Testing 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests.

Non-Destructive Testing (NDT) is a process that involves the inspection, testing, or evaluation of materials, components and assemblies for materials’ discontinuities, properties and machine problems without further impairing or destroying the parts serviceability. This is an introductory course that will cover the basic concepts of the five major inspection methods studied through the Monroe County Community College NDT program: Visual Testing (VT), Liquid Penetrant Testing (PT), Magnetic Particle Testing (MT), Ultrasonic Testing (UT), and Radiographic Testing (RT). Through course progression, the student will become familiar with scope and limitations of each method, as well as develop a deeper understanding of how Non-Destructive Testing impacts the world in which we live.

103 Liquid Penetrant/Magnetic Particle Test 2 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests and NUET 102.

This course is to train students to carry out liquid penetrant and magnetic particle testing of engineering components. The course is divided into two parts. In the first part students will learn the principles of liquid penetrant testing, classification of penetrant materials, testing methods and testing equipment. In the second part, the students will learn the principle of magnetic particle testing performing magnetic particle test, and steps and sequence involved in magnetic particle testing will be learned in theory and practice. The types and characteristics of magnetic fields and magnetization processes will be studied. The measurement of magnetic fields and the instruments used to measure the magnetic field, classification of materials, process of demagnetization and equipment for demagnetization will also be learned in theory and practice. Students will also learn the precautions to be observed during testing, interpretation and evaluation of indications formed by discontinuities, procedure and applicable codes for acceptance and rejection of discontinuities. The classroom lectures will be supplemented by a series of laboratory exercises to provide hands-on training in performing these tests.

104 Visual Testing 2 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests and NUET 102.

The course will train students on how to detect visible surface discontinuities, especially those found in welded joints. The fundamentals of light and vision, visual perception and different types of equipment used to detect discontinuities on the surface will be covered. More emphasis on practical welding as well as inspection of weld joints using a variety of weld gauges will be done during the practical sessions. Material attributes and physiological factors affecting the performance and judgment of the inspector will be studied along with the procedure and applicable codes for acceptance and rejection of discontinuities. Students will perform a complete series of laboratory exercises to provide hands-on training in the practice of each test procedure.
105 Radiography-Level 1  
2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests and NUET 102  
F  
This is a first course in Radiographic Testing. The students will study volumetric discontinuities using radiographic tests; understand penetrating radiation, its properties and limitations; and safety precautions. The principle of image formation, sensitivity and quality of radiographic process, codes and standards will be studied. Development of film, reading the films for discontinuities, film interpretations, procedures and codes for acceptance and rejection criteria for flaws will be learned in practical sessions.

106 Radiography-Level 2  
2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: NUET 105  
W  
This is the continuation of the Level 1 course. However, the same aspects are studied at a higher level of difficulty and responsibility. Students will study volumetric discontinuities using radiographic tests; understand penetrating radiation, its properties and limitation; and safety precautions. The principle of image formation, sensitivity and quality of radiographic process, codes and standards will be studied. Development of film, reading the films for discontinuities, film interpretations, procedures and codes for acceptance and rejection criteria for flaws will be learned in practical sessions.

107 Ultrasonic-Level 1  
2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests and NUET 102  
F  
This is a first level course in Ultrasonic Testing (UT). The students will learn the principles of sound wave propagation and attenuation, generation, nature, types and properties of sound waves and modes will be studied. Testing methods and techniques, responses from a variety of flaws, equipment and its operating principles to detect flaws by using different detectors will be taught during the practical sessions. Standard reference blocks and calibration will be used. Procedure and codes for acceptance and rejection criteria for flaws will be taught.

108 Ultrasonic-Level 2  
2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: NUET 107  
W  
This is the continuation of the Level 1 course. However, the same aspects are studied at a higher level of difficulty and responsibility. The principles of sound wave propagation and attenuation, generation, nature, types and properties of sound waves and modes will be studied. Testing methods and techniques, responses from a variety of flaws, equipment and its operating principles to detect flaws by using different detectors will be taught during the practical sessions. Standard reference blocks and calibration will be used. Procedure and codes for acceptance and rejection criteria for flaws will be taught.

120 Radiation Protection  
3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: NUET 100  
W  
This course presents the interaction of radiation with materials including biological systems. This course covers the basic atomic and nuclear structures including the physics of fission and radioactive decay, shielding and measurement of the various types of radiation. It also covers detection devices such as typical survey meters and personnel monitoring devices. The course will also discuss how exposure to radiation can be minimized and legal aspects of working with radioactive sources. Major radiation incidences and industrial operating experience will be discussed. Associated lab work will reinforce the principles of radiation detection.

130 Plant Systems I  
3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: NUET 100  
W  
This course will introduce the students to various types of electrical and mechanical drawings which are commonly used in nuclear power plants. These drawings will then be the fundamental tools used to introduce the students to a large array of the various systems in the plant. Students will come to understand the concepts of standby safety-systems, electrical systems and sources of emergency electrical power, the power production systems such as Main Steam and Feedwater, and the electronic systems which provide indications and automated plant protection. The students will be challenged to relate many of the design attributes of these systems and to directly relate those attributes using the various systems drawings. Certain significant operating experience issues will be introduced and the students will be challenged to relate these issues directly to the applicable plant systems and drawings. Schematic drawings of safety-significant motor-operated valves will be covered in detail as an example of component electrical controls. This course will also introduce the students to the practice of using drawings to support the planning of maintenance activities and methods of tagging energy sources to protect personnel during maintenance.

205 Nuclear Plant Experience  
2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: NUET 100 and NUET 120 and NUET 130  
Sp, Su  
This course is held in cooperation with DTE’s Fermi2 Nuclear Power Plant Training Center. The course consists of 40 hours of training activities held on-site at Fermi2. Training is conducted by instructors from the Nuclear Training Center. The emphasis is on hands-on maintenance training with the same facilities used by plant personnel. Training takes place over five consecutive days, and includes a tour of the control room simulator, and an Instrumentation and Control walkthrough in the plant. Five hours are planned for students to take the EEI Career Assessment and Diagnostic Instrument (CADI) test, including report out of results. This test gives feedback on how students compare to actual nuclear employees. This test assesses student career interest and is not part of the course grade.
This course presents the fundamental and specific details of power plant components. Course content will include component types and characteristics, principles of operation, failure mechanisms, and how they relate to a system. Specific components discussed are compressors, diesel engines, heat exchangers, pumps, strainers, filters, turbines, valves, switchgear, transformers, circuit breakers, motors, relays, generators, and valve actuators. Maintenance activities such as component tagging, disassembly, troubleshooting, lubrication, reassembly, and testing are also covered.

230 Plant Systems 2 3 Credit Hours
Prerequisite: NUET 100 and NUET 130 F

This course is a continuation of Nuclear Plant Systems 1. The course will examine chemistry control systems, electrical power generation systems, emergency and backup systems. Systems specific to Pressurized Water Reactors (PWR) will be introduced. Operating issues will continue to be examined and related to plant systems and drawings. This course will reinforce the practice of using drawings to support the planning of maintenance activities and methods of tagging energy sources to protect personnel during maintenance.

240 Reactor Theory, Safety and Design 3 Credit Hours
Prerequisite: NUET 100 and MATL 121 and PHY 151 and CHEM 151 W

This course presents the fundamental concepts of nuclear reactor theory with a primary focus on light water cooled boiling water reactors. Concepts presented will include neutron interactions, nuclear fission, and chain reactions in thermal light water cooled reactors; thermal diffusion and neutron thermalization; criticality and reactivity calculations, reactivity kinetics and feedback mechanisms; fission product daughter production and radionuclide transmutation; reactor safety principles including emergency core cooling and engineered safety features; design basis accident and core damage mitigation; case studies.

100 RN Nursing Student 1 Credit Hour
Success Course 1 Billable Contact Hour
Prerequisite: Admission to the RN program F, W

This blended course provides an opportunity for students to learn the skills necessary to be successful in the nursing program. Nursing students often face multiple demands on their lives. This course will help the nursing student learn and implement effective and efficient study techniques, as well as learn to balance school and home demands.

103 Fundamental Nursing Care 9 Credit Hours
Prerequisite: Acceptance into the nursing program, ENGL 151, PSYCH 151, BIOL 157
Corequisite: BIOL 158 and ENGL 152 must be successfully completed prior to or concurrently F, W

This course provides an introduction to the fundamental concepts of holistic nursing care. Nursing judgment, integral to the nursing process, will be emphasized as a means of facilitating foundational care of the adult patient. Special focus will be placed on the diverse needs of the older adult and exploring the role of the professional nurse within a multidisciplinary health care team. The clinical content will be applied 8-13 hours weekly, utilizing the campus laboratory and hospital.

220 Power Plant Components 3 Credit Hours
4 Billable Contact Hours
Prerequisite: NUET 100 and NUET 130 and ELEC 125 W

This course presents the fundamental and specific details of power plant components. Course content will include component types and characteristics, principles of operation, failure mechanisms, and how they relate to a system. Specific components discussed are compressors, diesel engines, heat exchangers, pumps, strainers, filters, turbines, valves, switchgear, transformers, circuit breakers, motors, relays, generators, and valve actuators. Maintenance activities such as component tagging, disassembly, troubleshooting, lubrication, reassembly, and testing are also covered.

220 Power Plant Components 3 Credit Hours
4 Billable Contact Hours
Prerequisite: NUET 100 and NUET 130 and ELEC 125 W

This course presents the fundamental and specific details of power plant components. Course content will include component types and characteristics, principles of operation, failure mechanisms, and how they relate to a system. Specific components discussed are compressors, diesel engines, heat exchangers, pumps, strainers, filters, turbines, valves, switchgear, transformers, circuit breakers, motors, relays, generators, and valve actuators. Maintenance activities such as component tagging, disassembly, troubleshooting, lubrication, reassembly, and testing are also covered.

NURSING (NURS)

CNA 100 Certified Nurse Aide 5 Credit Hours
8 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests F, W, Sp, Su

This course is designed to prepare an individual to fulfill the role of direct caregiver/nursing aide. The course emphasizes the skills and behaviors that are significant to employers of nurse aides, including cardiopulmonary resuscitation. This course includes classroom activities, skills practice time in the laboratory and supervised clinical practice at a long-term care facility. Written assignments and tests (both written and performance testing) are a part of this course. Upon completion of this course, students will be eligible to take the clinical and written exams required for certification as a nurse aide.

105 Medical Surgical Nursing 5 Credit Hours
Care I 10.8 Billable Contact Hours
Prerequisite: NURS 103, BIOL 158, POLSC 151
Corequisite: HLTSC 120 and BIOL 260 (Both must be successfully completed prior to or concurrently) and NURS 110 unless course already passed

FALL 2015
This course incorporates a holistic approach in the management of care for the adult patient with commonly occurring health problems while supporting the student’s professional development. The student will use nursing judgment and effective communication while implementing the nursing process in providing safe quality care of patients with common medical surgical health care needs. During this course clinical content will be applied 13 hours per week utilizing the hospital and the campus laboratory.

105 Medical Surgical Nursing 5 Credit Hours
Care I 9.5 Billable Contact Hours
Prerequisite: NURS 103, BIOL 158, ENGL 152
Corequisite: HLTSC 120 (must be successfully completed prior to or concurrently) and NURS 110 unless course already passed

WINTER 2016
This course incorporates a holistic approach in the management of care for the adult patient with commonly occurring health problems while supporting the student’s professional development. The student will use nursing judgment and effective communication while implementing the nursing process in providing safe quality care of patients with common medical surgical health care needs. During this course, clinical content will be applied weekly utilizing the hospital and the campus laboratory.
110 Mental Health Nursing Care 4 Credit Hours 7 Billable Contact Hours
Prerequisite: NURS 103 and BIOL 158
Corequisite: HLTSC 120 and BIOL 260 (must be successfully completed prior to or concurrently) and NURS 105 unless course already passed

FALL 2015
This course incorporates a holistic approach in the management of care for patients with mental health problems while supporting the students’ professional development. The student will use nursing judgment and effective communication while implementing the nursing process in providing safe quality care for patients with mental health needs. The clinical content will have 13 hours per week for five weeks of clinical instruction in the acute psychiatric care setting, select community settings and campus laboratory.

110 Mental Health Nursing Care 3.5 Credit Hours 6 Billable Contact Hours
Prerequisite: NURS 103, BIOL 158, ENGL 152
Corequisite: HLTSC 120 (must be successfully completed prior to or concurrently) and NURS 105 unless course already passed

WINTER 2016
This course incorporates a holistic approach in the management of care for patients with mental health problems while supporting the students’ professional development. The student will use nursing judgment and effective communication while implementing the nursing process in providing safe quality care for patients with mental health needs. Clinical will be held weekly in the acute psychiatric care setting, select community settings, and campus laboratory.

204 Obstetrical Nursing Care 4.5 Credit Hours 9 Billable Contact Hours
Prerequisite: NURS 105 and NURS 110, HLTSC 120, BIOL 260
Corequisite: NURS 205 unless course already passed Must successfully complete ENGL 152 prior to or concurrently F, W

This course incorporates a holistic approach to the care and management of the obstetrical patient and family while supporting the professional development of the student. Basic clinical reasoning principles and effective communication skills will be applied while implementing the nursing process in the provision of safe, quality patient care. Clinical content will be applied 13 hours per week utilizing the hospital, the outpatient community setting and the campus laboratory.

205 Pediatric Nursing Care 4.5 Credit Hours 9 Billable Contact Hours
Prerequisite: NURS 105 and NURS 110 and HLTSC 120 and BIOL 260.
Corequisite: NURS 204 unless course already passed F, W

This course incorporates a holistic approach in the management of care with the pediatric patient and their family while supporting professional development of the student. The student will use basic clinical reasoning and effective communication while implementing the nursing process to provide safe quality care. During this course, clinical content will be applied 13 hours per week utilizing the hospital, the outpatient community setting and the campus laboratory.

208 Medical Surgical Nursing 9 Credit Hours
Care II 15.33 Billable Contact Hours
Prerequisite: NURS 204 and NURS 205 and ENGL 152
Corequisite: NURS 210 unless course already passed F, W

This course incorporates a holistic approach in the management of care for the adult patient with complex health problems while integrating the student’s professional development. The student will use clinical reasoning and effective communication while implementing the nursing process in providing safe quality care for patients with complex medical-surgical health care needs. Clinical content will be applied 13 hours weekly utilizing the hospital, community settings and campus laboratory.

210 Nursing Leadership and Management 3 Credit Hours 3 Billable Contact Hours
Prerequisite: HLTSC 120, NURS 105 and NURS 110
Corequisite: NURS 204 and NURS 205 F, W

This course facilitates the student’s professional development and socialization into the nursing profession. Clinical reasoning skills and communication are integrated through discussion/content surrounding nursing leadership and management concepts.

212 Nursing Practicum 3 Credit Hours 8.1 Billable Contact Hours
Prerequisite: NURS 208 and NURS 210 F, W

This four-week capstone course provides theoretical content related to the holistic management of groups of patients while collaborating with a multidisciplinary health care team. During the final three weeks, students have the opportunity to assume the identity of the professional nurse and increase their patient workload in a medical-surgical setting, utilizing a full-time preceptorship immersion. Clinical reasoning and communication skills continue to be emphasized through active decision making. Clinical practice during this time will be full-time work for a period of three weeks.

PHILOSOPHY (PHIL)

151 Introduction to Logic 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W

This course includes basic and standard systems of formal and informal logic, embracing both logical theory and the practical application of logic. This course examines critical thinking and inductive and deductive analysis. Material includes the leading topics of traditional Aristotelian logic, together with insight into symbolic logic. This course will include writing assignments.

152 Introduction to Western Philosophy 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests F, W

This course provides an introduction to the types of philosophy and the study of the great thinkers’ contributions to studies which investigate the principles and facts of reality, human nature and basic problems of conduct relevant to man. Emphasis is on early Greek philosophy: Plato and Aristotle. This course will include writing assignments.
253 Introduction to the Philosophy of Religion  3 Credit Hours  3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  F, W
This course presents an introductory inquiry into the study of the philosophy of religion and how philosophers evaluate religious claims. The concern of the course is not to inculcate any particular faith or doctrinal position but to develop an understanding and appreciation of basic religious concepts, and to give students philosophical tools to evaluate them. This course is a satisfier course for the Global Studies Degree Designation.

PHOTOGRAPHY (PHOTO)

151 History of Photography  3 Credit Hours  3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course is an exploration of the photographers and evolution of the photographic process from its inception to the present. Emphasis will be placed on individual photographers and the various artistic photographic progressions.

PHYSICAL SCIENCE (PHYSC)

151 Physical Science  4 Credit Hours  5 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests
This course serves as an introduction to physical science for both applied and non-science majors. Selected topics on astronomy, chemistry, geology and physics are included. Emphasis is placed on understanding the fundamental principles of the physical sciences. It will also include a discussion of the limitations and potential applications of the physical sciences. This course requires laboratory work.

PHYSICS (PHY)

101 Technical Physics  4 Credit Hours  5 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 124, MATH 151 or higher or a qualifying score on ACT or COMPASS tests  W
This course is designed for technical majors to provide an understanding of physical principles and their application to industry and certain technical occupations. Topic coverage reflects the general needs of the various technician programs while giving a broad overview of the physical world around us. Topics included are measurement, kinematics, mechanics, rotational motion and dynamics, simple machines, matter, fluids and fluid flow, heat and thermodynamics, waves, sounds, optics and some electricity and magnetism. Course requires laboratory work.

151 General Physics I  4 Credit Hours  6 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS tests. Recommended: MATH 157 and MATH 159 or MATH 164  F
This course is a liberal arts course in the fundamental principles of physics. Units include measurement, kinematics, mechanics, rotational motion, fluids, temperature and heat, and waves and sound. This course is designed to fulfill the physics requirement in pre-medicine, pre-dentistry, pre-law, pre-architecture, pre-chiropractic and similar pre-professional programs. This course should not be taken as a substitute for pre-engineering physics or other related disciplines. This course requires laboratory work.

152 General Physics II  4 Credit Hours  6 Billable Contact Hours
Prerequisite: PHY 151  W
This course is a continuation of General Physics I; units on electricity and magnetism, light and optical phenomena, relativity and atomic, quantum and nuclear physics are included. Course requires laboratory work.

251 Engineering Physics I  5 Credit Hours  7 Billable Contact Hours
Prerequisite: MATH 171. MATH 172 is highly recommended  F
This course is designed to satisfy the requirements of engineering and physics majors. This course focuses on the development of the ability to marshal physical principles and mathematical techniques in the solution of problems encountered in measurement, mechanics, relativity, rotational and wave motion, waves, sound and fluid mechanics.

252 Engineering Physics II  5 Credit Hours  7 Billable Contact Hours
Prerequisite: PHY 251. MATH 251 and 273 are highly recommended  W
This course is a continuation of PHY 251 and is designed to satisfy the requirements of engineering and physics majors. Topics include temperature and heat, electricity and magnetism, electromagnetic waves, optics and quantum, atomic and nuclear physics. This course requires laboratory work.

POLITICAL SCIENCE (POLSC)

150 Global Studies Orientation  1 Credit Hour  1 Billable Contact Hour
F, W
This interdisciplinary course will give students a working knowledge of the concept of globalization, along with an awareness of international trends that affect all fields of study. In addition, students will gain basic knowledge about how to recognize international cultural differences and basic skills for communicating across cultures. This course will also introduce students to the benefits, opportunities, expectations and requirements of the Global Studies Degree Designation.
151 Introduction to Political Science 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W, Sp, S
This course emphasizes American political institutions, policy formulation, diverse political groups and key issues. This course also provides a foundation for responsible citizenship. Emphasis is given to the federal level of government with a critical look at contemporary problems in American democracy.

211 Introduction to Comparative Politics 3 Credit Hours
Prerequisite: POLSC 151
F, Sp
This course addresses key concepts, theories and academic approaches for the study of comparative politics and for understanding differences among governments and political systems in today's complex world. Students will explore concepts such as authoritarianism, democratization, legitimacy, sustainability, globalization and modernization and will understand how these concepts influence political activity within and among states. Examples of different government structures will be introduced, including the key factors that affect policy decisions within various government systems and structures and how those structures and decisions shape society. Students will also obtain a greater understanding of various political and social cultures from both Western and non-Western cultures. Whenever possible, students will use research, the Internet, and museums and travel to enhance their learning of the differences between political systems and institutions. This course is a satisfier course for the Global Studies Degree Designation.

221 State and Local Government 3 Credit Hours
Prerequisite: POLSC 151
F, Sp
This course is a study of state and local government units, functions and activities. Students will explore and evaluate the everyday activities of local government units as well as special problems in local politics and policy development. Consideration is given to intergovernmental relations between the various local levels of government and the federal government.

252 International Relations 3 Credit Hours
Prerequisite: POLSC 151 or HIST 154 or HIST 155
Students will examine the fundamental and persistent forces which influence world politics and the foreign policies of states. Through theoretical, ideological and pragmatic approaches, students will explore the historical, economic, geographical, social and cultural phenomena that impact international politics. This course is a satisfier course for the Global Studies Degree Designation.

PRACTICAL NURSING (PNUR)

100 PN Student Nurse Success 1 Credit Hour
Prerequisite: Admission to PN program; students should take course prior to starting PN program.
F
This course provides an opportunity for students to learn the skills necessary to be successful in the nursing program. Nursing students often face multiple demands on their lives. This course will help the nursing student learn and implement effective and efficient study techniques as well as learn to balance school and home demands.

121 Fundamentals of Practical Nursing 9 Credit Hours
Prerequisite: Admission to Practical Nursing Program
Corequisite: PNR 121, HLTSC 120 and BIOL 158 must be successfully completed prior to or concurrently.
W
This course is the foundation nursing course from which other courses build and expand. It includes concepts and skills basic to nursing and introduces the role and scope of practice of the licensed practical nurse. The program's philosophy and organizing framework are introduced. Meeting the needs of clients experiencing a change in health status and the provision of basic nursing care is the focus. Integrated content includes normal and therapeutic nutrition, growth and development of the adult client, and mathematics for medication administration. The students will study in the classroom, the nursing skills laboratory, and acute and extended care clinical settings.

123 Mental Health Concepts in Practical Nursing 2 Credit Hours
Prerequisite: Admission to the Practical Nursing Program
Corequisite: PNR 121, HLTSC 120 and BIOL 158 must be successfully completed prior to or concurrently.
W
This blended format course introduces the concepts of mental health and mental illness and the principles of therapeutic communication skills and nursing interventions. It is designed to assist the students in utilizing the nursing process to provide therapeutic nursing care and to meet the mental health needs of clients with various psychiatric and behavioral disorders, and maladaptive behaviors. The course discusses the application of the stress adaptation theory in assisting clients to develop health coping mechanisms in managing the thoughts, emotions and behaviors of various disorders and stressful events. Various treatment modalities and psychotherapeutic medications are discussed. Students will study in the classroom, participate in online discussions and other activities, and apply the principles and concepts to the general client population in all settings.

124 Practical Nursing Care of Adults I 6.5 Credit Hours
Prerequisite: PNR 121 and PNR 123 and HLTSC 120 and BIOL 158
Sp
The focus of this course is the use of clinical problem-solving skills and nursing process to assist adults with common medical-surgical problems and select acute and chronic disorders in meeting health care needs. The course builds on the program's organizing framework. Students will study in the classroom and campus laboratory and provide basic nursing care to adults in medical-surgical acute care clinical settings.
125 Practical Nursing Care of Pediatric Clients 3 Credit Hours
Prerequisite: P Nur 124
This course introduces the use of the nursing process in the care of the hospitalized child and the childbearing family. It presents the principles and stages of growth and development from infancy through adolescence, common pediatric diseases and conditions, and conditions affecting the emotions and behaviors of children. Nursing and medication administration skills adapted to the care of children are demonstrated. Integrated content includes pharmacologic and nutritional needs of children. Students will study in the classroom, nursing skills laboratory, and acute care clinical settings.

126 Practical Nursing Care of Obstetrical Clients 2 Credit Hours
Prerequisite: P Nur 125
The focus of this course is a holistic view of the childbearing family and its adaptation to pregnancy and childbirth. Practical nursing students will study the nursing care related to the phases of maternity, including pregnancy, labor and delivery, and postpartum periods and the care of the newborn. Basic family growth and development, family health promotion and maintenance, common cultural and ethnic variations in childbearing practices, common childbearing complications, influences of other health disorders and family planning are also covered. Students will study in the classroom, nursing laboratory and clinical settings.

127 Practical Nursing Care of Adults II 5 Credit Hours
Prerequisite: P Nur 126
Corequisite: P Nur 126 unless previously passed
The focus of this course is the nursing care for clients with more complex or acute health alterations and complications related to these pathologies. Concepts in this course build on previously learned material in P Nur 124 and continue to build on the program's organizing framework. Dealing with medical emergencies and other common treatments and procedures for practical nurses will also be covered. Students will study in the classroom, campus laboratory and acute care settings.

128 Issues in Practical Nursing 2 Credit Hours
Prerequisite: P Nur 126
Corequisite: P Nur 127 unless previously passed
This blended format course will focus on issues related to practice of the licensed practical nurse, such as legal and ethical practice issues, historical perspectives of LPN education, career development and job seeking, trends in health care and the professional responsibilities of being an LPN.

129 Management Concepts for the Practical Nurse 8.5 Credit Hours
Prerequisite: P Nur 127 and P Nur 128
This four-week capstone course focuses on the charge nurse role of the licensed practical nurse in the management of the care of multiple clients in extended care settings. The major units discussed are the LPN roles as manager of client care and as manager of staff in extended care. Students are assigned to LPN or RN preceptors in charge nurse roles in select extended care settings, with nursing faculty functioning in faculty liaison roles. Students work collaboratively with preceptors to assume increased responsibility for multiple clients and the supervision of certified nursing assistants. The course prepares the student for beginning practice in the charge nurse role upon program completion. Students will study in the classroom, the nursing skills laboratory and extended care settings.

PRODUCT AND PROCESS TECHNOLOGY (MECH)
(Formerly Manufacturing Technology)

102 Manufacturing Processes 4 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
This is a survey course providing a comprehensive introduction to various manufacturing techniques used to produce products from metals, plastics, ceramics and composite materials. Classroom discussion will center around the major families of processes: forming, separating, conditioning, fabricating and finishing. Laboratory experience will include welding, foundry, sheet metal forming, machining and plastics manufacture.

103 Machining Basics & CNC 4 Credit Hours
6 Billable Contact Hours
Prerequisite: MECH 103
This course introduces the student to operation of basic machine tools, care and use of hand tools and common measuring equipment used in the machine shop. Theory and hands on operation of manual mill, lathe, grinding machine, band saws and basic operation of Computerized Numerical Machines are emphasized in this course. Other topics covered include basic metalurgy of metal cutting, machine tool theory. Appropriate terminology is to be used and safety is stressed.

104 CNC II 3 Credit Hours
4 Billable Contact Hours
Prerequisite: MECH 103
This course emphasizes use of Computerized Numerical Control (CNC) theory and practice as it applies to advanced machining techniques. The machinery handbook will be used to determine form, fit, clearance, rpm, feedrates, thread nomenclature and other parameters as it applies to machining. Other topics covered are optimization of machining time, programming efficiency, cutter selection, tool life, quality and safety consideration in operation of CNC equipment. Use and editing of G&M code as it applies to CNC milling and lathe are practiced and demonstrated by students through appropriate shop assignments. Appropriate theory and practice of safe work methods will be emphasized. This course was previously titled Machine Tool Operations.
This course is the third in sequence of CNC programming related courses that emphasize more advanced G&M programming concepts. Students will be editing programs using laboratory computers, send data to machines, troubleshoot code and work with machine specific post processors to modify and write code to run the specific machines. Other activities will include using different media to transfer data to machine tools, determine proper machining sequence, plan tool selection, operate machine controls to set up machines and document the setup using process sheets. Projects will comprise use of the CNC lathe and milling machines. Automation is covered. Appropriate terminology is to be used and safety is stressed. Appropriate theory and practice of safe work methods will be emphasized. This course was previously titled Advanced Machine Tools.

This course is an introduction to hydraulic principles and equipment used in industry. Basic hydraulic circuit design along with actual set-up and operation of hydraulic circuits is stressed.

This course covers advanced circuit design, hardware theory and application and circuit construction and operation in pneumatic systems. Emphasis is on circuits and components commonly covered in automated manufacturing. Circuits encountered will include pneumatic, electrical/electronic control and feedback.

This course is designed to allow the student to gain an understanding of the basic scientific principles that apply to the plumbing/pipefitting trade. Various hand and power tools will be used to install and join the different types of piping systems used in the trade. Additional topics include: installing pumps and piping systems, basic mathematics as it applies to the plumbing/pipetting trade, producing and interpreting basic shop drawings and piping sketches as used at a typical work site, use of the trade code book and applying code regulations to the installation piping.

This technician-level course covers the basic compression refrigeration cycle, refrigerants available for use, major refrigeration system components and fundamentals of system operations. Using small-scale, basic refrigeration systems, participants will apply theory to hands-on knowledge as they become familiar with evacuation and charging procedures and basic troubleshooting techniques.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>221</td>
<td>CAD/CAM II Solids</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: MECH 201</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course is second in sequence to the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>one on continue to be used. Emphasis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>will be on machining two and three</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dimensional objects and solids. Editing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>objects, extruding, sweeping, loft,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rotation features of the software in</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>manipulating the object will be</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>demonstrated. Students will learn to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>manage various levels of entities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>within the project as specified in the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>part drawing and generate surfaces to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>machine. Other aspects of the course</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>will include importing and exporting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>graphical data from CAD design software</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>with the purpose of generating code to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>machine complex surfaces, handling</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>data generated for rapid prototyping</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and discussing lean manufacturing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>concepts. Appropriate theory and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>practice of safe work methods will be</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>emphasized. Upon completion of this</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>course the students have the option to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sit for the CAD/CAM technologist</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>certification test.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>231</td>
<td>CAD/CAM III Toolpath</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: MECH 221</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course will build on the two</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>previous CAD/CAM courses in the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>program. The course covers the latest</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MasterCam Toolpath generation with two</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and three dimensional mechanical part</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>geometry. Import functions for</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>surfacing and rapid prototype from</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>other software will be used. Projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>will be more advanced and cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>associativity, level management and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>post processors choice. Students will</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>design and run toolpath and use set</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>up functions with best economical</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>production process planning. Also</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>covered will be group technology,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>robotic interfacing, rapid prototype</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and high speed machining (HSM).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Appropriate terminology is to be</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>used and safety will be stressed. Upon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>completion of this course the students</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>have the option to sit for the CAD/CAM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>technologist certification test.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PSYCHOLOGY (PSYCH)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>151</td>
<td>General Psychology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: ENGL 090, RDG 090, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 092 or MATH 150 or higher or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>qualifying score on COMPASS or ACT tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course provides an overview of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>major subject areas in psychological</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>science. We will explore several areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>of psychology in two key ways: by</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>understanding how scientific knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and principles are generated and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>evaluated and by exploring the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>implications of psychology’s findings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Principles of scientific investigation,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>including scientific theories,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>hypotheses, methods, and evaluating</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>results will be applied to the study of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>human behavior and experience,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>spanning content areas ranging from</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cellular to ecological, including</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>biological psychology, sensation,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>perception, human development,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cognition, learning, motivation,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>emotion, stress, and social processes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>We will also apply this knowledge and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>these skills to psychology and other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>subjects. The course is designed to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>prepare students for future</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>psychology classes and to enhance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>critical thinking skills for other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>academic studies, for careers, and for</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>everyday life.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>152</td>
<td>Psychology of Personality/Adjustment</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: PSYCH 151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course applies psychological</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>principles to the problems of the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>individual's adjustment to everyday life</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Topics include adjustment processes,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>personality development, theories of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>personality, behavior disorders,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>psychotherapy techniques, human</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>relationships, defense mechanisms and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>mental health.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>The Exceptional Person</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: ENGL 090 and RDG 090 and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 092 or 150 or higher or qualifying</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>score on COMPASS or ACT tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course is designed to give students</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>an understanding of persons with special</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>problems. The gifted, the physically</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>challenged, the emotionally challenged,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and the mentally challenged are</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>considered.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>251</td>
<td>Child Psychology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: PSYCH 151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course involves the investigation of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>the child's emotional, intellectual,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>social and physical development from</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>birth to age 12. The purpose of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>this course is to provide students with</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>scientific facts of children's behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for study, presented along with</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>practical application for parents,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>teachers, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>253</td>
<td>Social Psychology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: PSYCH 151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course emphasizes the individual</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>as a member of society. Social</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>psychology focuses on how individuals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and groups are impacted by, and have an</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>impact on, their social worlds. Social</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>psychology encompasses a broad range of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>topics, including such areas as</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>conformity, attitudes, gender,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>aggression, prejudice and discrimination,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and helping behavior. In this course,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>students will examine the theories and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>research in social psychology as both</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>scientists and as members of our own</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>social groups.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>254</td>
<td>Life Span Psychology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: PSYCH 151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This course will explore the developmental stages of human</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>behavior during the life cycle. The</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>stages of infancy; childhood;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>adolescence; early-, middle- and late-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>adulthood; late-late adulthood; death</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and dying will be covered. Various</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>issues and concepts will be dealt with</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>related to the typical psychological,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sociological and biological changes that</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>occur during each phase or stage of life</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The purpose of this course is to provide</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>the student with the opportunity to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>explore their own stages and those of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>their family, relatives, friends and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>others.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**QUALITY SYSTEMS TECHNOLOGY (QSTC)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>SPC Basics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: RDG 090 or qualifying</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>scores on ACT or COMPASS tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>An introductory course for those who</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>need a basic understanding of variation,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>statistical fundamentals, data gathering</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and control charting.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
111 Quality Management 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests

This course will introduce students to the management approach that developed from principles of Total Quality. Students will study the principles, concepts and practices of quality management as developed by experts like Deming, Juran, Crosby and others. Students will examine the role of organizations involved in world-class competition. Emphasis will be placed on customer satisfaction, employee empowerment, process identification, and measurement and continual improvement.

115 Statistical Process Control 3 Credit Hours
3 Billable Contact Hours
Prerequisite: MATH 119

This course focuses on the basic concept of variation, sampling methodology and basic six-sigma improvement tools including control charting, significance testing, process capability and DOE. Techniques used are relevant to manufacturing and service environments.

120 Introduction to Quality Systems 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

This course is designed to provide students with a working knowledge of the major systems of a modern industrial quality assurance program. Students will examine opportunities for quality improvement through the implementation of lean systems and mistake/error proofing. Emphasis will be placed on quality engineering elements dealing with quality planning, corrective and preventive action, measurement and continual improvement. Techniques used are relevant in manufacturing and service organizations.

150 Introduction to Metrology 3 Credit Hours
4 Billable Contact Hours
Prerequisite: MDTC 101 or MDTC 109 or MDTC 151 or MDTC 160 or MDTC 161

This course introduces the fundamentals of dimensional measurement, production gages and gaging techniques. Interpretation of geometric tolerances will also be covered with respect to their implications for inspection. Measurement techniques will emphasize proper use of open-setup equipment, including hand tools, gage blocks, surface plates and accessories, analog and digital measuring devices, optical comparator, pneumatic gages and coordinate measuring machines (CMM).

160 Team Problem Solving 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

This course is designed to build the student’s ability to respond to the needs of groups as a team member and team leader. Students will study team structuring, roles of team members and tools used in facilitating teams that contribute to organization quality. Kaizen, six-sigma, 8D and other effective team-based solutions will be modeled. Techniques used are applicable to manufacturing and service environments.

210 Advanced Metrology 3 Credit Hours
4 Billable Contact Hours
Prerequisite: QSTC 150

This course covers advanced metrological techniques, including CMM operation, Optical and Electronic Measuring and Graphical Inspection Analysis (paper gaging). Laboratory work concentrates on CMM operation and programming using the PC DMIS operating system.

220 Calibration and Gage R & R 3 Credit Hours
4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

This course covers techniques of gage calibration and gage repeatability and reproducibility studies (Measurement System Analysis). Hands-on work includes calibration of measuring tools and computerized gage documentation using Gage-trak software.

230 Documentation & Audit Preparation 3 Credit Hours
Preparation 3 Billable Contact Hours
Prerequisite: QSTC 111

This course examines techniques for the development and implementation of quality systems. Participants explore internal auditing techniques and preparation for third-party audits. The focus is on understanding quality system requirements and effective documentation alternatives to meet those requirements. ISO9000:2000, QS9000 (including the TE supplement), TS16949, ISO14000 and other assessment criteria are defined and applications are explored for service businesses and manufacturing.

READING (RDG)

090 Basic Reading Skills 3 Credit Hours
3 Billable Contact Hours
Prerequisite: Minimum test competencies in Reading must be met before registering for this course (This class does not count toward graduation)

This is a basic reading course emphasizing essential skills for building literal and critical comprehension proficiency. A COMPASS test score and a counselor’s consultation provide the basis for selecting this reading instruction. This course helps students accomplish the following: (1) develop basic reading skills which provide students the opportunity to succeed in college courses selected in the future, (2) show reading proficiency progress as measured by a post-test COMPASS score and (3) work toward gaining admission status to enroll in regular college courses. This course is meant for students whose first language is English.
RESPIRATORY THERAPY (RTH)

100 Respiratory Care Techniques I 6.5 Credit Hours
Prerequisite: Acceptance into the Respiratory Therapy program.
Corequisite: RTH 104 and BIOL 158
This classroom and laboratory course is an introduction to the duties and responsibilities of registered respiratory therapists. Topics covered include a review of physical science, cardiopulmonary anatomy and physiology, cardiopulmonary resuscitation, basic patient assessment skills, medical gas and aerosol administration, equipment processing, employee/patient safety, pulmonary medications, microbiology concepts and an orientation to clinical sites.

104 Cardiopulmonary Assessment 3 Credit Hours
Prerequisite: Acceptance into the Respiratory Therapy program.
Corequisite: RTH 100 and BIOL 158
This course is an introduction to basic physical and laboratory assessments of cardiopulmonary patients. Topics include basic pulmonary function, medical lab values, microbiology, blood gas physiology and analysis, chest imaging, bronchoscopy, electrocardiograms and bedside cardiopulmonary patient assessment.

110 Respiratory Care Techniques II 5 Credit Hours
Prerequisite: RTH 100, RTH 104 and BIOL 158
Corequisite: RTH 111 and RTH 116
This classroom and laboratory course continues the introduction to basic duties of respiratory care practitioners. Emphasis will be placed on patient assessment, basic therapy modalities, airway management, cardiopulmonary diagnostic equipment and techniques, and an introduction to continuous mechanical ventilation.

111 Respiratory Care Clinical Practice I 4.5 Credit Hours
Prerequisite: RTH 100 and RTH 104
Corequisite: RTH 110
This course provides a hospital experience in which previously acquired classroom theory and laboratory skills can be exercised. Skills practiced include those associated with patient respiratory assessment, oxygen therapy, a wide range of bronchopulmonary hygiene therapies and equipment processing. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

116 Cardiopulmonary Pathophysiology 4 Credit Hours
Prerequisite: RTH 100 and RTH 104
Corequisite: RTH 110 and RTH 111
This course gives the student an introduction to common cardiopulmonary diseases and conditions encountered by respiratory therapists. Topics include lung defense mechanisms, cardiopulmonary manifestation of disease, obstructive and restrictive lung diseases, review of microorganisms causing pulmonary infections and pulmonary diseases/conditions encountered in the critically ill patient population.

120 Respiratory Care Techniques III 5 Credit Hours
Prerequisite: RTH 110
Mechanical ventilation topics are continued in this classroom and laboratory course. Topics presented include volume pre-set and pressure pre-set ventilator equipment and application techniques and basic ventilation management of adult and neonatal patients.

121 Respiratory Care Clinical Practice II 2 Credit Hours
Prerequisite: RTH 111. Must also register for RTH 120
This clinical course provides three types of experience for the respiratory therapy student. First, there will be a continuation of basic respiratory care modalities from the previous semester. Second, the diagnostic areas of basic pulmonary function testing, arterial blood gas puncture and analysis and 12-lead electrocardiography will be introduced. Third, the student will receive an orientation to volume control ventilation in the adult ICU environment. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

211 Respiratory Care Clinical Practice III 5 Credit Hours
Prerequisite: RTH 121
This clinical course allows students to assist in the pulmonary management of adults on mechanical ventilation. An integrated approach to patient care will be stressed through accurate patient assessment and application of various equipment and therapies. Students will function as a member of the health care team. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

214 Adult Critical Care Management 4 Credit Hours
Prerequisite: RTH 120. Must also register for RTH 211
This classroom and laboratory course covers the cardiopulmonary equipment, techniques and management theory for the adult patient in an intensive care unit. Topics include critical care patient assessment, review of fundamental concepts in ventilation techniques and management of adult patients in surgical, medical, pulmonary, cardiothoracic and neuro intensive care settings.
216 Neonatal/Pediatric Management 3 Credit Hours
Prerequisite: RTH 120
This classroom and course covers topics including fetal growth and development, patient assessment, commonly encountered equipment, and the clinical management of neonatal/pediatric diseases and conditions.

220 Pharmacology for Respiratory Therapists 2 Credit Hours
Prerequisite: RTH 110
Spr, Su
This course provides an overview of general pharmacology principles and various drug categories that surround the care of cardiopulmonary patients. Emphasis will be made on drugs used in the critical care management of cardiopulmonary conditions, as well as a thorough treatment of drugs administered directly by respiratory therapists.

221 Respiratory Care Clinical Practice IV 4 Credit Hours
Prerequisite: RTH 211 and RTH 216. Must also register for RTH 226
W
This clinical course provides a varied experience for about-to-graduate students. A major emphasis will be in assessment and management of neonatal and pediatric patients in the intensive care unit on mechanical ventilation. Other rotations will be held in alternate settings such as home care, pulmonary rehabilitation, sleep disorders lab, long-term acute care and other areas where respiratory therapists are employed. This course will have an adult critical care clinical rotation to refresh skills for students nearing completion of the program. Weekly seminars on campus will facilitate student learning.

222 Respiratory Care Seminar 2 Credit Hours
Prerequisite: RTH 214
W
This course presents a wide variety of topics for discussion including respiratory care department continued professional development, management and supervision, job acquisition skills, medical research, end-of-life ethics and preparation for respiratory care boards. Discussion, class presentations and written assignments are part of this capstone program course.

226 Respiratory Care Techniques IV 3 Credit Hours
Prerequisite: RTH 214. Must also register for RTH 221
W
This course covers a variety of diagnostic and therapeutic setting topics as a companion course to RTH 221. Goals, procedures, and equipment associated with alternate sites includes advanced pulmonary functions, home care, pulmonary rehabilitation, sleep disorders, long-term acute care and emergency management and preparing for mass casualty events.

SOCIAL WORK (SWK)

106 Child Welfare 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests
This course is designed to introduce the student to the broad field of child welfare. Topics include the history of child welfare, the role of private and government agencies, legal aspects of child welfare, and case planning and investigation.

151 Introduction to Social Services 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course is intended to present an overview of the field of social work. The student will develop an understanding and beginning knowledge of what social work entails. Included will be the gamut of roles available to social work in a variety of different settings--schools, hospitals, mental health centers and social service agencies—all of which require different educational backgrounds. This course will focus on the needs and problems of clients (defined as individuals, families, groups and community); the variety of methods used to help solve these problems; the social, cultural, political and economic values which affect these needs; and problem solving.

296A Work Experience I 1 Credit Hour
1 Billable Contact Hour
Students may earn credit by voluntarily participating in a predetermined, prescribed set of activities at various social service agencies. Credit may be earned at the rate of one hour per semester and requires a minimum of 45 hours of participation during that semester.

296B Work Experience II 1 Credit Hour
1 Billable Contact Hour
Students may earn credit by voluntarily participating in a predetermined, prescribed set of activities at various social service agencies. Credit may be earned at the rate of one hour per semester and requires a minimum of 45 hours of participation during that semester.

296C Work Experience III 1 Credit Hour
1 Billable Contact Hour
Students may earn credit by voluntarily participating in a predetermined, prescribed set of activities at various social service agencies. Credit may be earned at the rate of one hour per semester and requires a minimum of 45 hours of participation during that semester.

296D Work Experience IV 1 Credit Hour
1 Billable Contact Hour
Students may earn credit by voluntarily participating in a predetermined, prescribed set of activities at various social service agencies. Credit may be earned at the rate of one hour per semester and requires a minimum of 45 hours of participation during that semester.
**SOCIOLOGY (SOC)**

151 Principles of Sociology  
3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests  
F, W, Sp, Su

This course introduces the concepts of culture, socialization, social structure, social stratification, racial and ethnic relations and deviancy. These concepts are used principally to examine life in contemporary United States. Whereas psychology focuses on individual behavior, sociology focuses on behavior resulting from membership within and between groups.

152 Marriage & Family  
3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  
W

This course examines marriage and family at various periods in American history in order to assess the same today. Topics include the variety of households, divorce, working parents, male-female relationships and economic influences on marriage and family. Partisan political views on the family are discussed.

153 Women in Society  
3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  
F

This is a foundation course in women’s studies. Emphasis is placed on how women have been perceived historically and the progress they have made in the context of today’s society. The concept of “voice” will be examined in each of the four units, looking at how women have been silenced and how, and if, they have recovered their “voice.” This course is a satisfier course for the Global Studies Degree Designation.

160 Social Gerontology  
3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  
F

This course focuses on the aged as a social subculture of the United States. How roles and status change with age in relation to family and major social institutions and the adjustments that individuals make to these changes are examined. The impact of an aging population on society is also discussed. Special attention will be placed on similarities and differences in aging and change related to an individual’s gender, race, ethnicity and socioeconomic status.

161 Death, Loss and Grief  
3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  
W

This course analyzes the historical, socio-cultural, psychological and political construction of death, dying and bereavement in the United States and across world cultures. Ethical debates in the right-to-die movement and other social issues about the quality of life will be explored. This course will also address the challenges and rewards in working with the dying and grieving.

251 Modern Social Problems  
3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: SOC 151  
W

A number of social problems will be examined and interrelated as time permits. Topics include the global workplace, poverty, crime, power and wealth. Problems are analyzed with a set of sociological perspectives developed early in the semester.

**SPANISH (SPAN)**

151 Elementary Spanish I  
4 Credit Hours  
4 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests  
F

This course emphasizes the audio-lingual aspects of learning basic Spanish. The basic structure of the Spanish language with oral and written practice is the focus. This course is a satisfier course for the Global Studies Degree Designation.

152 Elementary Spanish II  
4 Credit Hours  
4 Billable Contact Hours  
Prerequisite: SPAN 151 or one year high school Spanish  
W

This course is a continuation of grammar practice in oral and written Spanish with selected readings. Emphasis is on spoken Spanish. This course is a satisfier course for the Global Studies Degree Designation.

251 Second Year Spanish I  
4 Credit Hours  
4 Billable Contact Hours  
Prerequisite: SPAN 152 or two years high school Spanish  
F

This course continues the review of grammar practice in oral and written Spanish, based on selected readings and lectures. Conversation skills are emphasized. This course is a satisfier course for the Global Studies Degree Designation.

252 Second Year Spanish II  
4 Credit Hours  
4 Billable Contact Hours  
Prerequisite: SPAN 251 or three years high school Spanish  
W

This course emphasizes aural and oral practices. The study of Spanish contemporary life and literature will be a major focus. This course is a continuation of Spanish 251. This course is a satisfier course for the Global Studies Degree Designation.

**SPEECH (SPCH)**

151 Communication Fundamentals  
3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  
F, W, Sp, Su

This course is designed to acquaint the student with the principles of the communication process: intrapersonal, interpersonal and public. It is a broad-based approach to aid the student in becoming a more effective communicator. Each student will present formal speeches to inform, persuade and demonstrate and be expected to participate in class discussions.
### THEATER (THEA)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>151 Introduction to Theater</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: RDG 090 or ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F, W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This course is a comprehensive survey of the theater and its drama. The goal is to familiarize the student with theater as an art form and as an implement of education and entertainment. The following aspects of theater may be considered in the course: play and play structure, scene design, scene construction, lighting and sound, costume and make-up, theater history, directing and acting.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>152 Directing/Production Technology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: THEA 151 and instructor's approval.</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Directing and Production Techniques offers a survey of directing principles and a study of fundamental elements in the analysis and production of a play. Although the materials consider the relationship of directing to other production crafts (set design, lighting, sound, costumes), the main focus is on the work of the director and particularly on the relationship with the script and the actor. This initial exploration provides a foundation for a more detailed look at varieties of theater experience and the processes of theatrical production.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WELDING (WELD)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Introduction to Welding Processes</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>F, W, Sp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This course is an in-depth introduction to the technical concepts pertaining to the more common industrial welding and cutting processes. Machine functions and filler metal chemistry will be emphasized as well as code and procedure requirements for a variety of industrial needs. Welding/ cutting processes covered (including laboratory applications) include: oxy-fuel cutting (OFC), plasma arc cutting (PAC), shielded metal arc (SMAW), gas tungsten arc (GTAW) and gas metal arc (GMAW) welding.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>101A Introduction to GMAW</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F, W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The student is introduced to manufacturing's most common welding process. Emphasis is placed on machine setup and flat position welding techniques on various weld joints.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
101B Basic SMAW 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests  
F, W  
The student is introduced to flat position stick welding using various common welding electrodes. Emphasis is placed on welding technique in the flat and horizontal positions.

101C Arc Applications 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 101B  
F, W  
A continuation of WELD 101B, the student progresses to vertical-up welding and is introduced to low hydrogen electrodes and vee groove weldments.

102 Advanced SMAW 6 Credit Hours  
8 Billable Contact Hours  
Prerequisite: WELD 100  
F, W  
The major emphasis of this course is the development of welding skills utilizing the shielded metal arc (SMAW) welding process. Students will be welding vertical up, over-head and multipass with various rods and metal thicknesses.

102A Multi-Pass Arc Welding 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 100  
F, W  
Students perfect their welding skills by welding thick section fillet welds in all positions. Expertise is developed using fast freeze and low hydrogen electrodes.

102B Code Welding Techniques 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 102A  
F, W  
Students perform several common code welds in all positions. Completion of the course requires successful guided bend tests in all positions using fast freeze and low hydrogen electrodes.

102C Multi-Pass Pipe Fillet Welding 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 102A  
F, W  
Students master weld pool control and all position welding techniques on an eight-inch, pipe-to-plate welding exercise. The finished project requires approximately 84 stringer and weave bead combinations in all positions.

103 Weldment Evaluation and Testing 3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: WELD 100 or MECH 102  
F, W  
This course provides an introduction to the various methods used to inspect weldments for reliability using both nondestructive and destructive techniques. Weld quality and procedure requirements of the AWS Structural Welding Code will be introduced. The knowledge and skills required for certification as an AWS welding inspector will be covered in-depth. Laboratory experience will be gained in non-destructive test methods (visual, ultrasonic, magnetic particle, radiographic, eddy current and dye penetrant testing).

104A Introduction to GTAW 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 100  
F, W  
Students are introduced to gas tungsten arc welding. All assignments are completed on mild steel in the flat and vertical positions on various types of weld joints.

104B Introduction to GMAW 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 100  
F, W  
Students perform GMAW welding on a variety of weld joints in all positions. Weld integrity is determined by guided bend testing.

104C GTAW-Stainless Steel 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 100  
F, W  
Students perform GTAW welds in a variety of weld positions and joint designs on thin gage stainless steels. Bead color and base metal distortion are greatly emphasized.

104D GTAW-Aluminum 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 100  
F, W  
Students are required to master welding techniques particular to aluminum. Metal chemistry and weld perfection are emphasized.

105 Welding Metallurgy 3 Credit Hours  
4 Billable Contact Hours  
Prerequisite: WELD 100 and MATL 101  
F, W  
This course covers the physics and metallurgy of welding steel, aluminum and cast iron. In addition, the course covers welding procedure qualifications, welding design, industrial welding processes, equipment and parameter selection for production applications.

106 Basic Pipe Welding 6 Credit Hours  
8 Billable Contact Hours  
Prerequisite: WELD 100 and WELD 102  
F, W  
This course deals with vertical-up, fixed position pipe welding on standard pipe diameters and thicknesses. Emphasis is placed on fit-up preparation, code-making organizations and standards and destructive/non-destructive pipe welding tests.

106A Pre-Pipe Welding Skills 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 100 and WELD 102  
F, W  
Students are required to thoroughly master tie-in and rod pick-up welding techniques on three-eighths of an inch mild steel plate in all positions. The satisfactory completion of guided bend testing is a course requirement.

106B SMAW Pipe Welding--Uphill 2 Credit Hours  
3 Billable Contact Hours  
Prerequisite: WELD 106A  
F, W  
Students are required to weld eight-inch diameter, schedule 40 pipe in the 2, 5 and 6G positions. Four guided bend tests are required for course completion.
106C SMAW Pipe Welding--Downhill

Prerequisite: WELD 106A
F, W

Students are required to weld two, eight-inch diameter, schedule 40 pipes in the 5 and 6G position, vertical down weld progression. All procedures relating to the A.P.I. code are adhered to.

110 Welding Symbols and Blueprint

Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
F, W

This course is designed to introduce the basic concepts of blueprint reading and welding symbols. A programmed, audio-visual training technique provides the vehicle to blueprint reading and welding symbol experience, and is reinforced with classroom lectures, workbook assignments, hands-on projects and written evaluations.

114 GMAW and GTAW Applications

Prerequisite: WELD 100
F, W

A continuation of basic concepts learned in WELD 100, this course is designed to develop the skill levels of GMAW and GTAW welders and introduce pulse transfer in both processes. Acceptable levels of weld quality are significantly increased in this course as welders begin welding nonferrous metals, weld in all positions and complete more demanding destructive tests on their projects.

115 Entry Level Welding

Prerequisite: WELD 110
16.67 Billable Contact Hours

This course is an introduction into oxy-fuel cutting, shielded metal arc welding, gas metal arc welding and gas tungsten arc welding. Machine functions and filler metal chemistry will be emphasized, as well as code and procedure requirements for a variety of industrial needs. Welding/cutting processes covered (including laboratory applications) include: oxy-fuel cutting (OFC), plasma arc cutting (PAC), CNC plasma/ace cutting, shield metal arc welding (SMAW), gas tungsten arc welding (GTAW) and metal arc welding (GMAW). GTAW will be completed on a variety of ferrous and non-ferrous metals.

215 Advanced Level Welding

Prerequisite: WELD 115
16.67 Billable Contact Hours

This course deals primarily with vertical up, fixed position pipe welding on a multitude of pipe diameters and pipe thicknesses. Emphasis is placed on fit-up preparation, code making organizations and standards, and destructive/non-destructive pipe welding tests.

216 Basic Pipefitting

Prerequisite: WELD 110 and WELD 102 or WELD 114
Sp, Su

This course will cover basic fabricating techniques of various pipe intersections, pipe runs and sheet metal layout for heating, plumbing and power plant installations.

240 AWS Qualification/Certification-Entry Level

Prerequisite: WELD 100 and WELD 110 and WELD 114
6 Billable Contact Hours

This course is designed to meet the skill and knowledge requirements established by the American Welding Society for entry-level welders. Successful course completion meets the welding and cutting processes standards established in the requirements of AWS QC10, Specification for the Qualification and Certification for Entry Level Welders. Testing includes SMAW, GMAW and GTAW on aluminum, stainless and mild steel, on flat stock up through three-eighths of an inch.

250 AWS Qualification/Certification-Advanced Level

Prerequisite: WELD 102 and WELD 106
6 Billable Contact Hours

This course is designed to meet the skill and knowledge requirements established by the American Welding Society for intermediate-level welders. Successful course completion meets the welding and cutting processes standards established in the requirements of AWS QC11, Specification for the Qualification and Certification for Intermediate Level Welders. Testing includes SMAW, GMAW and GTAW on three-eighths of an inch flat aluminum, stainless and mild steel, and on eight-inch mild steel, stainless and aluminum pipe, one-eighth of an inch thick.

WORD PROCESSING (WPR)

102 Word Processing I

Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests and ADMN 102 or 131 or equivalent keyboarding skills
3 Credit Hours

Word Processing I is designed to develop proficiency in the operation of word processing software using a microcomputer system. Course content focuses on creating, saving, retrieving, editing, formatting, enhancing, printing and merging a variety of documents. Content also includes file management, introduction to microcomputer operating systems, and terminology and use of the Internet and e-mail.

103 Advanced Word Processing

Prerequisite: WPR 102
3 Credit Hours

Advanced Word Processing develops proficiency in the advanced word processing functions of Microsoft Word such as macros, sorting, tables and columns. A simulation will give additional practice in the advanced features of the software.