

# COURSE DESCRIPTIONS

## ACCOUNTING (ACCTG)

### 151 Accounting Principles 4 Credit Hours 4 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement tests.

The study of accounting theory and principles is applied to service and merchandising enterprises, including special journals and ledgers, adjusting and closing procedures, preparation of financial statements, promissory notes, inventory control and valuation, depreciation, payroll and an introduction to cash control and partnership accounting.

### 152 Accounting Principles 4 Credit Hours 4 Billable Contact 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.

### 201 Microcomputer Accounting I 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ACCTG 151 and CIS 109

This course is an introduction to computerized accounting software using QuickBooks. Students will review and apply basic accounting principles, record transactions and generate computer documents for various types of business organizations.

### 205 Microcomputer Accounting II 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ACCTG 151 and CIS 109

This course is an introduction to computerized accounting software using Sage 50. 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 3 Billable Contact 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 4 Billable Contact 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 APB and FASB pronouncements and related topics.

### 252 Cost Accounting 4 Credit Hours 4 Billable Contact 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 non-manufacturing costs.

### 254 Intermediate Accounting II 4 Credit Hours 4 Billable Contact 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 APB and FASB pronouncements and related topics.

### 255 Introduction to Taxation 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ACCTG 151

This is an introductory course in individual taxation and provides a comprehensive understanding of the United States Tax code as it relates to individuals. The course is designed to develop proficiency in the preparation of individual federal income tax returns in both a manual and computerized environment. Partnership and Corporate Taxation are briefly covered.

### 256 Taxation & IRS Certification VITA 3 Credit Hours 4 Billable Contact Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

This course provides a comprehensive understanding of the U.S. tax code as it relates to individuals and prepares students for the IRS Tax Preparation Exam and Certification. Upon successful completion of IRS certification, students will participate in the Volunteer Income Tax Assistance Program that provides free income tax preparation services for qualified individuals in Monroe County, Michigan.

## ANTHROPOLOGY (ANTHR)

### 152 Introduction to Cultural Anthropology 3 Credit Hours 3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

Cultural anthropology provides the conceptual and methodological tools necessary to understand the diversity of human lifeways on a global basis. The course introduces such powerful concepts as culture and socialization and explores the effects of these on people's worldview. This allows students to enhance their understanding of the underlying reasons why some societies have beliefs, lifeways, and customs vastly different from their own and allows them to see themselves and their own culture in a new light. This course is a satisfier course for the Global Studies Degree Designation.

**155 Introduction to Archaeology** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on  
 accepted placement tests

F

Archaeology is a global social scientific discipline investigating human ancestry. This course provides a thorough introduction to archaeology's rationale, history, methods, and theory. Comparative case studies from archaeological investigations of ancient cultures illustrate major points. Lectures, demonstrations, slide shows, hands-on experiences and application exercises will be used to facilitate the learning experience. This course is a satisfier course for the Global Studies Degree Designation.

**165 Eastern North American Archaeology** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on  
 accepted placement tests

W, S

This course is designed to provide a thorough introduction to the diversity of cultures found in eastern North America from the initial Native American occupation to the early Euro American settlement using the unique perspective that archaeology provides. Students are exposed to cultures whose belief systems, methods of enculturation and socialization, and styles of living that are vastly different from their own. The course emphasizes the effect of culture, culture change, and cultural ethnogenesis on societies across time and space. Finally, it seeks to provide an understanding of the need for careful analysis and interpretation of finds and an appreciation of the fragile nature of our cultural heritage.

**175 Archaeological Field Methods** **3 Credit Hours**  
**4 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on  
 accepted placement tests

S

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 field work 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 score on  
 accepted placement tests

F, W

This is an introductory course for all art 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: ENGL 090 and RDG 090 or qualifying score on  
 accepted placement tests

F, W, S

The student will be exposed to the fundamental principles governing art in its various forms. PowerPoints, 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 class is a satisfier course for the Global Studies Degree Designation.

**160 Two-Dimensional Design** **3 Credit Hours**  
**6 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on  
 accepted placement tests

F, S

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 score on  
 accepted placement tests

F

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

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 score on  
 accepted placement 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**  
**3 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 score on accepted placement 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**  
**3 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 score on accepted placement 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 waterbase media.

**251 Watercolor Painting II** **3 Credit Hours**  
**3 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**  
**3 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 score on accepted placement 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**  
**3 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**  
**3 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**  
**3 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**  
**3 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. This 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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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 6 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying score on accepted placement tests  
F, W, S

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 interrelation of the parts of the universe. Major areas of study include historical overviews, stars, stellar evolution, galaxies, cosmology and the solar system. Some day/evening outside observing may be required.

## AUTOMOTIVE ENGINEERING TECHNOLOGY (AUTO)

### 101 Internal Combustion Engines 4 Credit Hours 6 Billable Contact Hours

Prerequisite: RDG 090 or qualifying score on accepted placement 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 6 Billable Contact Hours

Prerequisite: ELEC 125  
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 6 Billable Contact Hours

Prerequisite: RDG 090 or qualifying scores on accepted placement 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 4 Billable Contact Hours

Prerequisite: ELEC 125 or AUTO 102 and AUTO 101 or AST 105  
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 4 Billable Contact Hours

Prerequisite: RDG 090 or qualifying score on accepted placement 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 6 Billable Contact Hours

Prerequisite: AST 102 or ELEC 125  
Corequisite: AST 101 or instructor consent  
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 4 Billable Contact Hours

Prerequisite: RDG 090 or qualifying score on accepted placement tests  
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 6 Billable Contact Hours

Prerequisite: AUTO 101 and AUTO 103 and AUTO 104  
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 4 Billable Contact Hours

Prerequisite: ELEC 125  
W, S

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.

## AUTOMOTIVE SERVICE TECHNOLOGY (AST)

### 101 Introduction to Automotive Service 3 Credit Hours 4 Billable Contact Hours

Prerequisite: RDG 090 and MATH 090 or qualifying score on accepted placement tests  
F, W

This course focuses on orientating the student to the Monroe County Community College automotive service technology environment. Students will receive comprehensive instruction on laboratory procedures, policies, shop safety and proper tool usage. They will also be introduced to all eight of the major automotive systems, the industry as a whole, as well as the procedures to attaining both state and national certifications.

**102 Electrical Systems I** **4 Credit Hours**

**5 Billable Contact Hours**

Prerequisite: RDG 090 and MATH 090 or qualifying scores on accepted placement tests.

Corequisite: AST 101

F

This course focuses on introducing the student to automotive electrical/electronic systems which includes basic theories, electrical/electronic components, wiring and circuit diagrams, circuit protection, switches, relays, solenoids and automotive battery fundamentals. This course also focuses on the use of test equipment such as digital multimeters, test lights, jumper wires and logic probes used to diagnose basic electrical/electronic faults.

**103 Electrical Systems II** **4 Credit Hours**

**5 Billable Contact Hours**

Prerequisite: AST 101, AST 102

W

This course is a continuation from Electrical Systems I. Topics include, but are not limited to, the fundamentals, diagnostics, and service of the following areas: advanced battery design, starting systems, starter motors, charging systems, and lighting circuits, instrumentation and warning lamps, accessories, passive restraints, and alternative power sources as well as, the proper tools and equipment used to perform diagnostics and service procedures.

**105 Engine Theory** **3 Credit Hours**

**4 Billable Contact Hours**

Prerequisite: RDG 090 and MATH 090 or qualifying scores on accepted placement tests

Corequisite: AST 101

W

This course focuses on the theory, construction, inspection, and diagnosis of the internal combustion engine. Topics covered include fundamental operating principles, diagnosis, inspection, and adjustment of gasoline engines and their internal components.

**120 Brake Systems** **4 Credit Hours**

**6 Billable Contact Hours**

Corequisite: AST 101

F

This course focuses on the design and operation of automotive brake systems. Topics include diagnosis and repair, to manufacturer specifications, of traditional and Anti-Lock Brake Systems (ABS) as well as Traction Control Systems (TCS). Lab demonstrations and on-car repair provide a working knowledge of hydraulic systems, disc/drum machining, rebuilding, and power assist, as well as scan tool usage to repair ABS/TCS systems.

**125 Steering and Suspension** **4 Credit Hours**

**7 Billable Contact Hours**

Corequisite: AST 101

W

This course focuses on steering mechanisms and suspension components for Macpherson strut, parallelogram and additional industry standard designs. Proper methods of inspection, diagnosis, repair and alignment of both front and rear steering and suspension components will be covered.

**130 Heating and Air Conditioning** **4 Credit Hours**

**7 Billable Contact Hours**

Corequisite: AST 101

S

This course focuses on automotive heating and air conditioning system theories, troubleshooting, and servicing. Proper refrigerant recovery, recycling, storage, and use of recharging equipment will also be covered. Students will be made aware of recent environmental concerns relevant to coolant and refrigeration. In addition, basic shop safety and safe use of recycling equipment will be discussed.

**202 Engine Performance I** **4 Credit Hours**

**7 Billable Contact Hours**

Prerequisite: AST 101, AUTO 101 or AST 105 and AST 102 or ELEC 125

F

This course focuses on automotive engine performance pertaining to the On Board Diagnostic system, the sensors that report information to the engine controller and the fuel system will be the focus of this course. Students will have an opportunity to utilize the various tools and procedures in order to understand the operation, diagnose malfunctions, and repair faults in these systems.

**203 Engine Performance II** **4 Credit Hours**

**7 Billable Contact Hours**

Prerequisite: AST 202

W

This course is a continuation of Automotive Engine Performance I. It will reinforce the diagnostics and operational procedures introduced in the previous course, while expanding the student's understanding of the On Board Diagnostic System. Automotive emission and ignition system operation, design and diagnosis will be covered.

**205 Engine Repair** **5 Credit Hours**

**8 Billable Contact Hours**

Prerequisite: AST 101, AST 105

W

This course will focus on the repair procedures utilized in repairing and rebuilding internal combustion engines. Disassembly, assembly, part inspection, use of manuals and repair/replacement procedures will be applied to both upper and lower engine components.

**210 Manual Transmission Driveline Repair** **5 Credit Hours**

**8 Billable Contact Hours**

Prerequisite: AST 101, AST 105

F

This course focuses on the operation and service procedures of manual drive trains and axles including drivelines, constant velocity (CV) joints, manual transmissions and transaxles, differentials and clutches.

**211 Automatic Transmission Repair** **5 Credit Hours**

**8 Billable Contact Hours**

Prerequisite: AST 103, AST 105

S

This course focuses on the operation, testing, diagnosis and repair of automatic transmissions and transaxles. Hydraulic theory, torque multiplication factor, and planetary gear set operation will be covered in detail. Proper disassembly and reassembly procedures will be emphasized.

**249 Cooperative Work Experience** **3 Credit Hours**

**6 Billable Contact Hours**

Prerequisite: Department Coordinator or Division Dean Approval

W

This course focuses on introducing the student to real world on-the-job learning experiences, whether paid or volunteer. The student will spend a minimum of 90 hours working off site at an actual repair facility. This course is intended to supplement the hours in courses on campus for the purpose of demonstrating competency and refining employability skills.

## BIOLOGY (BIOL)

### 151 Biological Sciences I 4 Credit Hours 6 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 and MATH 092 or MATH 150 or qualifying score on accepted placement tests

F, W, S

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.

### 153 Biological Sciences II 4 Credit Hours 6 Billable Contact Hours

Prerequisite: BIOL 151

W

General Biology is designed to cover selected biological topics which 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 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 score on accepted placement 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 socioeconomic, political, and environmental problems. Course requires laboratory work. This course is open to both science- and non-science majors.

### 161 Life in the Ocean 4 Credit Hours 4 Billable Contact Hours

Prerequisite: MATH 090, ENGL 090 and RDG 090 or qualifying scores on accepted placement tests.

F, W

This course covers the living organisms in coastal areas and the open ocean and their relationship to the marine environment. Topics covered in this class includes the marine fishes; marine reptiles, birds and mammals; marine animals without a backbone; marine seaweeds and plants; physical ocean and ocean floor; marine ecosystems such as coral reefs and estuaries, and the impact of humans on the marine environment.

### 251 Elements of Botany 4 Credit Hours 6 Billable Contact Hours

Prerequisite: BIOL 151

W

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

F

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.

### 257 Anatomy & Physiology I 4 Credit Hours 6 Billable Contact Hours

Prerequisite: BIOL 151

Corequisite: BIOL 151 with admission into the associate degree in nursing (ADN) program (nursing students only)

F, W, S

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.

### 258 Anatomy & Physiology II 4 Credit Hours 6 Billable Contact Hours

Prerequisite: BIOL 257

F, W, S

A continuation of BIOL 257, 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.

### 259 Introduction to Pathophysiology 4 Credit Hours 4 Billable Contact Hours

Prerequisite: BIOL 258 and BIOL 260

S

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

F, W, S

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 relevant to allied health majors.

### 264 Fundamentals of Genetics 4 Credit Hours 6 Billable Contact Hours

Prerequisite: BIOL 151

W

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.

**266 Ecology** **4 Credit Hours**  
**6 Billable Contact Hours**  
Prerequisite: Math 092 and BIOL 151 or BIOL 156

F  
This course will study the structure, function and regulation of populations, communities and ecosystems, emphasizing human activities and their ecological consequences. Students will be introduced to the types of questions asked by ecologists, the principal concepts and theories that guide ecological inquiry, and the methods that are used to answer ecological questions. Both terrestrial and aquatic systems will be considered. This course is a continuation of the previously learned ecological concepts in BIOL 151 and BIOL 156. The laboratory component part of the course will include field trips.

## **BUSINESS ADMINISTRATION (BUSAD)**

**151 Introduction to Business** **4 Credit Hours**  
**4 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W, S  
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**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F  
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.

**180 Entrepreneurship Capstone** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: HUMAN 152, BUSAD 170, and MCOM 201

The Entrepreneurship Capstone course provides a structure for students to consolidate and showcase the learning, experiences, resources, and skills from the other courses in the Entrepreneurship Program sequence. The Capstone course provides a framework to move from idea formation, development of a business plan, portfolio construction, sponsorship resources identification and market development, presentation preparation, to proposal delivery or 'pitch' to a panel of judges.

## **BUSINESS LAW (BSLW)**

**251 Business Law** **4 Credit Hours**  
**4 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W  
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**  
**3 Billable Contact Hours**  
Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W  
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**  
**3 Billable Contact Hours**  
Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W  
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**  
**3 Billable Contact Hours**  
Prerequisite: ENGL 151 and one of the following:  
BUSAD 151, BMGT 160, BMGT 201 or ENGL 102.

W  
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**  
**3 Billable Contact Hours**  
Prerequisite: BMGT 201 and ECON 251

W  
This course covers the process of globalization and its implication 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**  
**4 Billable Contact Hours**  
Prerequisite: BUSAD 151 or BMGT 201

W

The focus of this course is on business organization and management as they apply to the human resource functions of recruitment, selection, placement, orientation, and training. Attention is given to job analysis and evaluation, moral measurement, and maintenance, union-management relationships, and employee's economic and physical security.

### **CERTIFIED NURSE AIDE (CNA)**

**100 Certified Nurse Aide** **6 Credit Hours**  
**10 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W, S

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 092 or MATH 124 or higher or qualifying score on accepted placement tests

F, W

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 accepted placement tests and CHEM 150 or one year of high school chemistry

F, W

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, S

A continuation of Chemistry 151 which includes obtaining and applying quantitative information in laboratory to the fundamental interrelationships among molecular bonding, solution chemistry, solids, chemical kinetics, chemical equilibria, acids bases buffers, chemical thermodynamics, and electrochemistry. Course requires laboratory work.

**155 Chemistry and Society** **4 Credit Hours**  
**5 Billable Contact Hours**  
Prerequisite: MATH 092 or equivalent and ENGL 151.

F, W, S

This course focuses on the relationship between chemistry and the world around us, evaluating how chemistry impacts our society, the environment, and the economy. Chemical principles are introduced to the extent necessary for understanding contemporary topics such as: water, air, energy, common household chemicals, material science, polymers, biochemistry, nutrition, pharmaceuticals, genetics, forensics, and measurement science. The course provides education in the scientific method and is appropriate for non-science majors. Course requires laboratory work.

**160 Fundamentals of Health-Science Chemistry** **4 Credit Hours**  
**6 Billable Contact Hours**  
Prerequisite: CHEM 150 or CHEM 151

F, W, S

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 alkanes, alkyl halides, alkenes, alkynes, alcohols, ethers and carboxylic acids. Laboratory develops basic organic chemistry techniques and skills 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 ketones, aldehydes, carboxylic acids and derivatives, polyenes, aromatics, amines, carbohydrates and amino acids. Laboratory develops basic organic chemistry techniques and skills 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 score on accepted placement tests

F, W, S

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 score on accepted placement tests

F, W

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.

### 181 Digital Media 3 Credit Hours 3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

W

This course is designed to introduce students to the wide variety of digital story-telling and news presentation tools. As consumers turn from traditional news sources to digital platforms, journalists and other media specialists need to learn a new portfolio of skills, from handling breaking news in real time to blogs, tweets, podcasts, video, audio, multi-media, linking, geomapping 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 traditional journalism conventions, such as accuracy, fairness and comprehensive news gathering and reporting, while using digital media tools. The course was previously called New Media Journalism, JOURN 181.

## COMPUTER INFORMATION SYSTEMS (CIS)

### 105 Office Keyboarding Skills 2 Credit Hours 2 Billable Contact Hours

F, W, S

This course presents proven techniques for increasing keyboarding speed and accuracy using the alphabetic and 10-key numeric keypads. The student will complete lessons following a routine of drills focusing on one letter/number and completing timings that enforce letter/number keyboarding skills. This is an online course using a Website specifically created for teaching numeric and keyboarding skills using the touch operation.

### 109 Spreadsheet Software 3 Credit Hours 3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement tests.

F, W

This course familiarizes students with electronic spreadsheets, spreadsheet graphics and data management systems. The various applications to business and general management systems will be discussed. Hands-on experience will be provided utilizing a popular spreadsheet software package such as Excel.

### 112 Database Software 3 Credit Hours 3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

This course familiarizes students with the basic models and capabilities of standard database management systems. Students will have hands-on experience in creating and using databases on a microcomputer. Skills will be obtained primarily through the use of a common database software package.

### 123 Presentation Software 3 Credit Hours 3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

W

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.

### 130 Introduction to Computer Information Systems 3 Credit Hours 3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W, S

This course provides students with the 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.

### 135 Scripting Language Programming 3 Credit Hours 3 Billable Contact Hours

Prerequisite: MATH 124 or higher or qualifying score on accepted placement test.

F, W, S

This course provides an introduction to the design and development of a computer program using a scripting programming language. Students will work with an integrated development environment to create a program to solve a specific problem. This course will provide an overview to the wide variety of programs that can be created when using a scripting programming language.

### 140 Help Desk Concepts 3 Credit Hours 3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F

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.

### 150 Computer Science I 4 Credit Hours 4 Billable Contact Hours

Prerequisite: MATH 092 or higher or qualifying score on accepted placement tests.

F

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.

### 153 Desktop App Development 3 Credit Hours 3 Billable Contact Hours

Prerequisite: CIS 150

F

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.

**167 Discrete Structures** **4 Credit Hours**

**4 Billable Contact Hours**

Prerequisite: MATH 159 or MATH 164 or MATH 171

Corequisite: CIS 250. Must be successfully completed prior to or concurrently.

W

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**

**3 Billable Contact Hours**

Prerequisite: CIS 130 or MDTC 160 or WPR 102

W

This course covers basic skills and concepts in Dreamweaver, Flash, and Photoshop. This course is designed for students in disciplines outside of MCCC'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.

**178 Design Concepts** **4 Credit Hours**

**4 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W

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**

**3 Billable Contact 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.

**182 Illustrator Graphics** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130

F, W

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

**183 Mobile App Development** **4 Credit Hours**

**4 Billable Contact Hours**

Prerequisite: CIS 150

W

This course covers the design, implementation and development of mobile applications for different phone environments. Students will have the chance to work with different integrated development environments and other tools to create fully functioning mobile applications. This course will also look at cross-platform development tools to produce applications to run across multiple phone environments.

**184 PhotoShop Graphics** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130

F, W

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

**186 Multimedia Development** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130

W

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.

**187 Digital Video Editing** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130

W

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.

**188 InDesign Desktop Publishing** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130 or WPR 102

F, W

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.

**189 3D Animation** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130

F

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 surfacing materials, textures and effects. Students will create and animate digital models/objects.

**205 System Analysis and Design** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130

W

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.

**208 PC Operating Systems** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: CIS 130

W

This course emphasizes the study of operating systems for personal/client computers. Topics include: Command line vs. graphical user interfaces operating systems installation, operating system management and day-to-day operating systems functionality. Operating systems discussed in this course will include a commercially accepted client and an open source client. This course will enhance students' understanding of PC operations.

**209 Network Concepts 3 Credit Hours****3 Billable Contact Hours**

Prerequisite: CIS 130

W

This course provides students with the basic networking concepts needed as an information technology professional. Topics include: networking technologies and topologies on a network, wireless networking, Web-based networks, virus security, broadband/DSL, troubleshooting tools, cabling, switching technologies, and equipment and technologies used in LANs and WANs. TCP/IP, along with the OSI communication model, will be discussed in detail. Aside from learning the technologies involved in networking, students will get to understand the daily tasks involved with managing and troubleshooting a network. Students will have a variety of hands-on and case project assignments that reinforces the concepts covered in each chapter.

**212 Full Stack Development 3 Credit Hours****3 Billable Contact Hours**

Prerequisite: CIS 150

F

This course will cover the design, implementation and development of full stack applications. Students will have the chance to create full stack applications focusing on database creation, graphical user interface, user experience and user interaction. This course will look at all of the different technologies used to create full stack applications, for both front-end development and back-end development.

**220 Hardware Maintenance 4 Credit Hours****4 Billable Contact Hours**

Prerequisite: CIS 208

W

This course develops a student's knowledge of micro-computer hardware for the purpose of installation and maintenance at the equipment level. Students will learn to install, protect and troubleshoot CPUs, disk drives, memory, circuit boards, video adapters, displays, CD-ROM drives and more. Students will learn how to use the Internet to upgrade and maintain computers. This course will also bring together all the physical components of equipment evaluation for purchase, future maintenance and growth. In addition, this course will help to prepare students to successfully pass the A+ certification exam.

**228 Linux Administration 3 Credit Hours****3 Billable Contact Hours**

Prerequisite: CIS 208

S

This course covers installing, configuring and managing a multi-user UNIX/Linux computer system. Topics covered include: file systems, disk management, user management, configuration, remote access, remote desktop, customizing and kernel customizing. Students will perform a number of hands-on activities to reinforce classroom discussions.

**230 Windows Server 3 Credit Hours****3 Billable Contact Hours**

Prerequisite: CIS 208

F

In this course, students learn to perform post-installation and day-to-day administration tasks in a single-domain or multiple-domain Microsoft Windows-based network.

**234 Advanced Windows Server 4 Credit Hours****4 Billable Contact Hours**

Prerequisite: CIS 230

W

This course provides a training solution for support professionals working in a Microsoft Windows Server-based enterprise environment. Students must have previous experience supporting a Windows Server-based network. Students learn to design, implement and support the Windows Server network operating system in a multi-domain enterprise environment. The course is organized in four units, each covering support in different areas of the enterprise environment. In addition, this course will help to prepare students to successfully pass the MCSE certification exam.

**250 Computer Science II 4 Credit Hours****4 Billable Contact Hours**

Prerequisite: CIS 150

W

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.

**267 Beginning Game Programming 3 Credit Hours****3 Billable Contact Hours**

Prerequisite: CIS 250

W

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.

**268 Assembly Language/Computer Architecture 4 Credit Hours****4 Billable Contact Hours**

Prerequisite: CIS 150

W

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.

**277 User Interface Design 3 Credit Hours****3 Billable Contact Hours**

Prerequisite: CIS 182 or CIS 184

W

This course will introduce students to designing user interfaces for human-computer interactions. Emphasis will be placed on universal design principles, interface design process and the various formats for deployment.

**279 Designing for Digital Environments** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: CIS 178 and CIS 182 or CIS 184

F

This course will prepare students for the broad range of design challenges related to designing for digital environments. The course will explore current digital technologies, interaction methods and presentation methods. Designs may include: alternative reality, environmental designs, digital marketing, projections, and others requiring a digital platform to communicate.

**284 Advanced Photoshop Graphics** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: CIS 184 and one of the following: CIS 172, CIS 178 or CIS 180

W

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

**289 Game Design and Development** **4 Credit Hours**  
**Capstone** **4 Billable Contact Hours**  
 Prerequisite: CIS 267

W

This course will guide students through the full production cycle of game design and development. Students will work through brainstorming, developing a narrative, designing and creating unique assets, programming, play testing, and presenting a final production-quality game.

## **CONSTRUCTION MANAGEMENT TECHNOLOGY (CONM)**

**100 Introduction to Design and Construction** **3 Credit Hours**  
**4 Billable Contact Hours**  
 Prerequisite: RDG 090 or qualifying score on accepted placement tests

F

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.

**101 Materials of Construction** **3 Credit Hours**  
**4 Billable Contact Hours**  
 Prerequisite: RDG 090 or qualifying score on accepted placement tests

F

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. Beginning sketching techniques are developed.

**102 Construction Practices** **3 Credit Hours**  
**4 Billable Contact Hours**  
 Prerequisite: RDG 090 or qualifying score on accepted placement tests

W

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.

**103 Auto CAD and Residence Drafting** **4 Credit Hours**  
**6 Billable Contact Hours**  
 Corequisite: CONM 110, unless previously taken;  
 MDTC 160 is highly recommended.

W

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, and sections and details utilizing AutoCAD. AutoCAD standards are implemented to complete a final project of a full set of construction drawings for a complete building, as well as 3-D rendering and data take-off with the use of BIM (Building Information Modeling).

**105 Mechanical Building Systems & Equipment** **4 Credit Hours**  
**6 Billable Contact Hours**  
 Prerequisite: CONM 110 or MDTC 101 or MDTC 151 or MDTC 160

W

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.

**107 Surveying** **3 Credit Hours**  
**4 Billable Contact Hours**  
 Prerequisite: RDG 090 and high school or college trigonometry

S

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**  
**4 Billable Contact Hours**  
 Prerequisite: RDG 090 or qualifying score on accepted placement tests

W

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**  
**4 Billable Contact Hours**  
 Prerequisite: CONM 103 or CONM 110

F, S

This course is designed to be an introduction to the use of computer aided design application software (AutoCAD) as it applies to the construction industry. The content covers skills needed to master two-dimensional drawing commands used most often in the development of architectural drawings.

**160 Green Building and LEED Rating System** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F

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, planet 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**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 or qualifying score on accepted placement tests

W

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**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 or qualifying score on accepted placement tests

F

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.

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

W

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 "Primavera" scheduling software to complete assigned projects.

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

F

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**  
**3 Billable Contact Hours**  
Prerequisite: CONM 101 and CONM 110

W

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**  
**1 Billable Contact Hour**  
Prerequisite: CONM 242

F

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)

**151 Introduction to Criminal Justice** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W, S

The course looks at the entire criminal justice system. It includes foundation concepts like justice, law and victimization along with an explanation of crime statistics with their use and source. It then progresses through the main divisions of the system; law enforcement, the courts and corrections. It shows the structure, problems and role of policing in modern society. Then it breaks down the court system and its overall function. Finally, it discusses the corrections system not only as a punitive measure but the other roles in the system.

**156 Fundamentals of Criminal Investigation** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

W

This course looks at the criminal investigation from a practical approach. Students will understand a crime scene and what is "evidence". The students will be exposed to the concepts of physical and testimonial evidence and how they can be brought into court. The basic principles of forensics will be applied to the evidence. The rules of evidence will be discussed to assure a working knowledge of how the crime scene transforms into a court case.

**160 Issues in Criminal Justice Ethics** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, S

This course looks to develop the ethical decision-making skills that are essential in the field of criminal justice. The course uses current, real-world examples offering comprehensive coverage of ethics across all three arms of the criminal justice system: the police, the courts and corrections. It combines coverage of the philosophical principles and theories that are the foundation of ethical decision-making with the latest challenges and issues that are unique in criminal justice.

**170 Introduction to Corrections** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement tests

F

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.

**251 Criminal Law** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F

This course is designed to provide a foundation for criminal law in the United States. Topics include an overview of the system and statutory construction. It discusses the basic components of crimes like mens rea and actus reas. The student uses critical thinking to apply definitions and elements of a crime, determining applicability while considering possible defenses. All basic types of crimes — property, person and public order, will be discussed along with the standard punishments.

**252 Juvenile Delinquency** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement tests

F, W, S

This course examines juvenile delinquency and the juvenile justice system in the United States. Students will be exposed to the theories that help understand the development of delinquency within the context of individuals, families and communities. This course will address some of the issues that face the juvenile justice system. Such issues include adolescent brain development, poverty, child maltreatment, substance abuse, mental health, incarceration, peer relationships, evidence-based interventions and the role of ideology in juvenile justice policy. The student will see both the legal and procedural differences between the adult and juvenile justice systems and understand the reasoning for the changes.

**253 Fundamentals of Criminology** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement tests

F

This course looks at the theoretical causes of crime and the implications the science has on policy. It covers both classic and contemporary research in criminology with an interdisciplinary perspective of crime and criminality by exploring the latest theories, concepts and research from sociology, psychology, genetics, evolutionary biology and the neurosciences.

**255 Police Organization and Administration** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement test

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**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

W

This course is an introduction to modern-day policing in the United States. The course focuses on the day-to-day operations of a police organization with an emphasis on patrol, reports, communications, arrests, officer survival skills, community relationships and jail operations. The course explores both the positive and negative aspects of policing including their role in society and how discretion and ethics play a major role in everyday operations. Complex issues including corruption and use of force will be explored, providing students with a well-rounded and realistic view of police work.

## **CULINARY ARTS AND FOODSERVICE EDUCATION (CAFE)**

**100 Food Sanitation** **1 Credit Hours**  
**1 Billable Contact Hours**  
S

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.

**101 Intro to Culinary Arts and Food Service Basic Skills** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: CAFE 100 or proof of current ServSafe Certification and RDG 090 and MATH 090 or qualifying scores on accepted placement test

F

This course is designed to teach students the fundamentals of food preparation and basic skills used in the foodservice industry. This includes safety skills, modern kitchen tools and equipment, product understanding and identification, cutlery skills, weights and measures, basic recipe understanding, fundamentals of basic cooking principles, laws and rules of professional foodservice, teamwork and understanding commercial kitchen operations.

**102 Food Prep/Cook I, Soups, Stocks Sauces** **3 Credit Hours**  
**5 Billable Contact Hours**  
Prerequisite or concurrent registration in CAFE 101

F

In modern foodservice, a thorough understanding of soups, stocks and sauce production is vital for the successful cook. Through daily lecture and production, students will learn the proper preparation of stocks, reductions, glazes and convenience bases. Roux and other thickening agents are taught with uses in sauce production. Soup classifications are taught and varieties of global soups and sauces are regularly prepared.

**103 Baking 1** **2 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite or concurrent registration in CAFE 101

F

Students will study and demonstrate, through lecture, demonstration and daily production in the lab, the basic skills used in modern foodservice operations. This includes principles of mixing and baking procedures for quick breads, yeast doughs and flatbreads; weighing and portioning; recipe conversions, and types of ingredients. Understanding the use of quick breads, yeast doughs and flatbreads are the main objective of this course.

## CYBERSECURITY AND INFORMATION ASSURANCE (IAS)

**103 Information Security Principles** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: 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 the course will provide an introduction to cryptography, intrusion detection systems, data firewalls, malicious software, information operations and warfare, denial of service attacks, regulations, law and governance.

F

**105 Computing and Social Responsibility** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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.

F

**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.

F

**210 Advanced Networking Practices** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: CIS 209 and CIS 130

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.

F

**213 Privacy and Technology** **3 Credit Hours**  
**3 Billable Contact Hours**  
 Prerequisite: CIS 130, 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.

W

## DANCE (DANCE)

**151 Ballet I** **1 Credit Hour**  
**2 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

The purpose of this course is to introduce the student to the study of classical ballet through traditional ballet bar, center floor and traveling ballet exercises and combinations. Included in the class are basic alignment principles, ballet vocabulary and steps and beginning combinations of 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).

W

**152 Modern Dance I** **1 Credit Hour**  
**2 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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).

F

**153 Jazz I** **1 Credit Hour**  
**2 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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).

W

**155 Dance Improvisation I** **1 Credit Hour**  
**2 Billable Contact Hours**  
 Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

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).

F, W

**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).

**219 Methods of Teaching Activities & Fundamental Movements** **2 Credit Hours**  
**2 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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.

**251 History of Dance** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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)**

**100 Foundations of Early Childhood Education** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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.

**102 Child Growth and Development** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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.

**104 Nutrition, Health & Safety for Early Childhood Education** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests  
Corequisite: ECE 102

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.

**106 Observation and Assessment of Childhood Development** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: ECE 100 and ECE 102 and ECE 104 (with a minimum grade of C)

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.

**108 The Care and Learning of Infants & Toddlers** **4 Credit Hours**  
**4 Billable Contact Hours**  
Prerequisite: ECE 100 and ECE 102 and ECE 104 (with a minimum grade of C)

W

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.

**110 Diverse Populations in Early Childhood Education** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: ECE 100 and ECE 102 and ECE 104 (with a minimum grade of C)

F, W

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.



**200 The Care and Learning of Preschool Children** 4 Credit Hours  
4 Billable Contact Hours  
Prerequisite: ECE 100 and ECE 102 and ECE 104 (with a minimum grade of C)

F

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, language and literacy, creative arts, and cognitive development. 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 child observation assignments and develop a unit of instruction for the preschool child.

**202 The Care and Learning of School-Age Children** 4 Credit Hours  
4 Billable Contact Hours  
Prerequisite: ECE 100 and ECE 102 and ECE 104 (with a minimum grade of C)

F

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.

**204 Administration of a Child Care Program** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: ECE 100 and ECE 102 and ECE 104 (with a minimum grade of C)

W

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 developmentally appropriate curriculum, communications with children, families and community, and child, staff, and program evaluations are discussed.

**206 Early Childhood Education Practicum** 5 Credit Hours  
5 Billable Contact Hours  
Prerequisite: ECE 106 and ECE 108 and ECE 200 and ECE 202 (with a minimum grade of C)  
Corequisite: ECE 110

F, W

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.

## **EARTH SCIENCE (ESC)**

**151 Earth Science** 4 Credit Hours  
5 Billable Contact Hours

Prerequisite: ENGL 090 and RDG 090 and MATH 090 or qualifying score on accepted placement tests

F, W, S

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.

## **ECONOMICS (ECON)**

**251 Principles of Macroeconomics** 3 Credit Hours  
3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on accepted placement tests

F, W, S

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.

**252 Principles of Microeconomics** 3 Credit Hours  
3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on accepted placement tests

F, W, S

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.

## **EDUCATION (EDUC)**

**151 Exploring Teaching** 3 Credit Hours  
3 Billable Contact Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W

This course provides an introduction to the field of education for students interested in pursuing a career in the profession. An overview of the foundational and historical context of education in the United States will be explored. Other topics include ethical and legal issues in U.S. education, diverse learners and their individual needs, and creating a community of learners. Michigan standards and requirements for teacher certification will be explored. Students will participate 45 hours in an approved K-12 setting to gain practical insight into the role of a professional teacher. This course fulfills similar pre-student teaching experiences required by universities.

**158 Art for Elementary Teachers** 3 Credit Hours  
3 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W, S

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.

**165 Music for Classroom Teachers 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying scores on accepted placement tests  
F, W

This course is highly suggested for future elementary teachers but is 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.

**ELECTRONICS AND COMPUTER TECHNOLOGY (ELEC)**

**115 Residential Wiring 1 Credit Hours**  
**2 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying scores on accepted placement tests  
S

Students will learn the proper procedures and skills to handle all aspects of residential house wiring. Circuits covered will start with the Utility meter box all the way through to individual duplex outlets. Breaker panels, add on sub panels, 240 v and 120v circuits, GFCI and AFCI circuits along with CAT5 communication wiring and install techniques will be covered. Proper tool usage and wiring techniques will also be covered.

**125 Fundamentals of Electricity 3 Credit Hours**  
**4 Billable Contact Hours**

Prerequisite: MATH 090 and RDG 090 or qualifying scores on accepted placement tests and one year high school algebra  
F, W, S

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. Student must have one year of high school algebra.

**129 AC/DC Motors and Controls 4 Credit Hours**  
**6 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 including variable frequency drives, switchgear starting and control circuits and power control with various Thyristor (SCR's and Triac's) devices. It will provide hands-on experience with wiring control circuits, checking the operational characteristics of AC/DC motors and the use/installation of circuit protection devices. Development and application of ladder logic theory, diagrams and circuits will be covered along with basic programmable logic controller (PLC) operation. Basic operation and circuit characteristics of three-phase alternators and transformers will be covered as well as operating principles of DC generators.

**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 higher  
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; Thevenin's theorem in DC and AC; computer-aided circuit analysis in DC and in 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.

**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 "playerpiano," programmable timing circuits and an autonomous robot.

**141 Industrial Automation & Process Control 3 Credit Hours**  
**4 Billable Contact Hours**

Prerequisite: ELEC 125  
W

This course covers typical industrial control systems for machine tool processes and materials handling. Included are programmable logic controllers, open-loop and closed-loop 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.

**145 Data Acquisition and Instrumentation 4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: ELEC 125  
Corequisite: 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, and analysis and on-line control of industrial processes. Multiple inputs and data logging, A/D conversion and various computer interface bus standards are discussed and implemented. This course also examines the characteristics and limitations of common electronic instruments. Topics covered include safety and lab techniques, op-amp circuits, AC and DC meters, digital multimeters, oscilloscopes, potentiometers and potentiometric bridges, transducers, signal-processing circuits, fiber optics and automatic test equipment.

**156 Introduction to Renewable Energy Systems 3 Credit Hours**  
**4 Billable Contact Hours**

Prerequisite: RDG 090 and MATH 119 or qualifying score on accepted placement 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 scores on accepted placement tests

Corequisite: MATH 119 or qualifying score on accepted placement test 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 scores on accepted placement tests

Corequisite: MATH 119 or qualifying score on accepted placement test 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.

**257 Applied Solar Photovoltaic Systems 3 Credit Hours**  
**4 Billable Contact Hours**

Prerequisite: ELEC 157 (Grade of C or better)

W

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 accepted English placement test must successfully complete ENGL 090, ENGL 151 Accelerated Learning Program (ALP).

**090 Basic Writing Skills, ALP 2 Credit Hours**  
**2 Billable Contact Hours**

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

Corequisite: ENGL 151

F, W, S

ENGL 090 is a two-credit hour course designed to assist ENGL 151 students who would have placed into developmental education classes. At the end of this course, each student will be expected to recognize the basic forms of the English sentence and standard punctuation. In addition, the students will be able to identify and write topic sentences, various types of paragraphs and essays. ENGL 090 works in conjunction with ENGL 151 to provide developmental students an opportunity to earn college credit for ENGL 151 while taking two additional hours of instruction designed to help them successfully complete ENGL 151. Successful completion of ENGL 090 in conjunction with successful completion of ENGL 151 will result in students earning ENGL 151 credit.

**102 Business Writing 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151 with a grade of C or higher

F, W, S

Students will prepare a resume, business letters and reports, including an oral briefing to prepare for effective communication skills for business careers.

**151 English Composition I 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W, S

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151 with a grade of C or higher

F, W, S

Students will use research strategies to explore topics and write research papers that demonstrate their findings.

**155 Technical Writing** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151 with a grade of C or higher  
F, W, S

Students will learn to analyze and interpret technical information using the diction and design layout of written technical communication. 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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
W

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
F, W

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**  
**3 Billable Contact 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 enjoying these literary forms. This course will include writing assignments and library work.

**253 American Literature** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
F

This is a survey course of major literary works, mainly 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. This course is a satisfier course for the Global Studies Degree Designation.

**254 Advanced Composition** **3 Credit Hours**  
**3 Billable Contact 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 Literature** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
W

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
F

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.

**260 Introduction to Shakespeare** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
W

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 the 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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
F, W

This course will introduce the student to the art and craft of creative writing. Students will read published works and will compose their own works of creative writing. Each student's work will receive attentive, individual scrutiny by the instructor as well as peers and will be discussed in class and in individual conferences.

**266 Non-Western Literature** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
F

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, China, and Japan. This course is a satisfier course for the Global Studies Degree Designation.

**267 British Literature: Anglo Saxon to 18<sup>th</sup> Century** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151  
W

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  
3 Billable Contact Hours**

Prerequisite: ENGL 151

W

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  
4 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F

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  
4 Billable Contact Hours**

Prerequisite: FREN 151 or one year high school French

W

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  
4 Billable Contact Hours**

Prerequisite: FREN 152 or two years high school French

F

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

W

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 accepted placement tests

F, W

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 score on accepted placement tests

F, W

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 score on accepted placement tests

F

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

W

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

F

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

W

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.

## **GENDER AND WOMEN'S STUDIES (GWST)**

### **151 Introduction to Gender Studies 3 Credit Hours 3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

Introduction to Gender Studies is an interdisciplinary class that explores gender, sex, and sexuality in light of how they influence and construct perceptions of women and men from varying racial, ethnic, and class backgrounds.

F

## **HEALTH SCIENCES (HLTSC)**

### **110 Medical Terminology 2 Credit Hours 2 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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 emphasizes correct spelling and pronunciation of medical words. Basic anatomy and physiology of systems are reviewed with an emphasis on disease conditions and diagnostic tests. This class utilizes a text/workbook, computer assisted instruction, and classroom and/or online instruction.

F, W, S

### **115 Introduction to Health-Care Professions 3 Credit Hours 3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

The purpose of this course is to develop an increased awareness of multiple health care professions. Students will examine the principles of health care, including ethics, patient-centered care, communication, informatics, patient safety and quality improvement in health care. Students will also learn techniques for obtaining a career in health care. Students will complete a Basic Certificate in Quality & Safety through the Institute for Health Care Improvement.

F, W, S

### **120 Pharmacology 3 Credit Hours 3 Billable Contact Hours**

Prerequisite: BIOL 258 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.

F, W, S

### **151 Principles of Nutrition & Diet Therapy 3 Credit Hours 3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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.

F, W, S

### **158 Phlebotomy Basics 6 Credit Hours 8 Billable Contact Hours**

Prerequisite: ENGL 090, RDG 090 and MATH 090 or qualifying scores on accepted placement tests

F, W

The purpose of this class is to promote quality phlebotomy standards and prepare students to work within the health care community as phlebotomy technicians. Instruction includes: safety and quality control, basic anatomy and physiology as it pertains to phlebotomy, specimen collection, phlebotomy techniques, laboratory tests, processing and transporting laboratory specimens, laboratory mathematics, computer skills, medical terminology, communication skills, and personal wellness. The student must be 18 years old.

### **159 Phlebotomy II 4 Credit Hours 9 Billable Contact Hours**

Prerequisite: HLTSC 158 with a "C" or better

W, S

The purpose of this course is to apply phlebotomy techniques and procedures in a clinical setting to obtain "hands-on" experience, gain confidence, and improve phlebotomy skill level. Students will work 120 hours in a CLIA regulated accredited laboratory, and complete 100 successful, unaided blood collections. Additionally, in the theory portion of this course instruction includes: quality assurance and quality control methods; legal, ethical, and professional conduct; procedures in collecting non-blood specimens, and procedures for arterial punctures. There is a computer component on Brightspace for this class. The student must be 18 years old.

### **160 Perspectives of Aging 3 Credit Hours 3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W, S

This course introduces students to the multiple dimensions of aging--physiologic, psychological, cognitive and social. The broad demographic, political and social frameworks and policy considerations that impact the aging population are also introduced.

## **HEALTH-PHYSICAL EDUCATION (HPE)**

### **150 Personal Health 3 Credit Hours 3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W, S

This is a course designed to provide college students with the core concepts and practices related to all the common areas of personal health and wellness as well as examining their own health attitudes, beliefs and practices. Personal, local, state and national health problems are examined 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; marriage and family relationships. The critical thinking skills 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**

**2 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W, S

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.

**153 Mental Health** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W, S

The purpose of this course 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 be explored. Developmental, cultural, societal and economic factors concerning mental health status will also be discussed.

**165 Karate** **1 Credit Hour**

**2 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

The purpose of the course is to help the participating student understand the art of Karate, not only as a method of self-defense, but as an art to develop coordination between mind and body. 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.

**170 Exercise Walking** **1 Credit Hour**

**2 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, S

Course content for physical fitness activities will include: selection 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 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 score on accepted placement tests

F, S

Course content for physical fitness activities will include: selection 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 score on accepted placement tests

F, W

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 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 score on accepted placement tests

F, W

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 Kickboxing** **1 Credit Hour**

**2 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W

The purpose of the course is to help the participating student understand the art 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 score on accepted placement tests

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 training 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. Student's 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 score on accepted placement tests  
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 lifting 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 score on accepted placement tests  
F, W

Course content for physical education activities will include: selection 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.

**184 Basketball** **1 Credit Hour**  
**2 Billable Contact Hour**  
Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests  
F, W

Course content for physical education activities will include: selection 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 P.E. 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 score on accepted placement tests  
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 score on accepted placement tests  
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 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.

**265 Intermediate Karate** **1 Credit Hour**  
**2 Billable Contact Hours**  
Prerequisite: HPE 165  
F, W

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 a review of basics regarding: 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 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 P.E. 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.

165	Karate	F, W
170	Exercise Walking	F, S
171	Jogging	F, S
173	Aerobics	F, W
174	Tae Kwon Do	F, W
175	Kickboxing	F, W
177	Weight Training	F, W
178	Weight Lifting	F, W
181	Volleyball	F, W
184	Basketball	F, W
185	Snowboarding	W
193	Snow Skiing	W

**200 Level Continuing Courses** **1 Credit Hour**

Prerequisite: appropriate 100-level beginning course

Course content includes a review of what was offered in the corresponding beginning course, along with more advanced skills. A greater emphasis will be on offensive and defensive strategies, with an in-depth evaluation of the individual skills and abilities for individual and team sport activities. For physical fitness and aerobic activities, more emphasis will be placed on individual goals that will challenge students' upper-level skills and abilities. 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.

265	Intermediate Karate	F, W
285	Intermediate Snowboarding	W
293	Intermediate Snow Skiing	W

**HISTORY (HIST)****151 Western Civilization to 1650** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, S

This course introduces the cultural and institutional development of western civilizations from their 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 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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

W

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

W

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, S

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

W, S

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, S

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

W, S

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**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

W

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.

**173 20<sup>th</sup> Century History and Civilization** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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 20<sup>th</sup> 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.

**HUMANITIES (HUMAN)**

**151 Introduction to Humanities** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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.

**152 Exploring Creativity** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W

This class will examine, in detail, the creative process and the factors that surround it. Beginning with the trinity 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.

**250 Visual Media Literacy** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement test

F, W

This course will acquaint the student with the cultural messages that are created and manipulated by movies and television programming. Each student will be provided with the vocabulary and critical tools necessary for communicating about these vital media. Upon successful completion of this course, students will be able to analyze visual media and their role in shaping the students' world. This course is a satisfier course for the Global Studies Degree Designation when taught by select faculty. See the Global Studies Degree Designation Completion Form for a list of instructors.

**256 Film & American Society: 1920s to Early 1960s** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement test

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. This course is a satisfier course for the Global Studies Degree Designation when taught by select faculty. See the Global Studies Degree Designation Completion Form for a list of instructors.

**257 Film & American Society: 1960s to Present** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement test

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. This course is a satisfier course for the Global Studies Degree Designation when taught by select faculty. See the Global Studies Degree Designation Completion Form for a list of instructors.

**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.

## JOURNALISM (JOURN)

### 161 Introduction to Journalism 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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*, and its website, [www.mcccagora.com](http://www.mcccagora.com).

### 251 Photojournalism 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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.

## MANUFACTURING TECHNOLOGY (MECH)

(Formerly Product and Process Technology)

### 102 Manufacturing Processes 4 Credit Hours 6 Billable Contact Hours

Prerequisite: RDG 090 or qualifying score on accepted placement tests

F, W

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: RDG 090 or qualifying score on accepted placement tests

F, W

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, surface grinder, band saws and basic operation of Computer Numerical Controlled (CNC) machines are emphasized in this course. Other topics covered include basic metallurgy of metal cutting and machine tool theory. Appropriate terminology is used and theory and practice of safe work methods will be emphasized.

### 104 CNC II 3 Credit Hours 4 Billable Contact Hours

Prerequisite: MECH 103

W

This course emphasizes use of computer numerical control (CNC) theory and practice as it applies to advanced machining techniques. Lab projects and online professional certification software will be used to determine form, fit, clearance, speeds and feeds, 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 centers and lathes, are practiced and demonstrated by students through appropriate lab assignments. Appropriate theory and practice of safe work methods will be emphasized. This course will cover half of the FANUC CNC Professional Certification.

### 105 CNC III 3 Credit Hours 4 Billable Contact Hours

Prerequisite: MECH 104

F

This course is the third in sequence of CNC programming and the second in related courses that emphasize more advanced G & M code programming concepts. Students will use the same online professional certification software to complete their FANUC CNC Professional Certification at the end of the semester. Students will also edit programs using laboratory computers, send data to machines, and troubleshoot code and work with machine-specific post processors to modify and write code to run on different types of machines. Other activities will include using different media to transfer data to machine tools, use desktop simulators, determine proper machining sequence, plan tool selection, operate machine controls to set up machines and document the setup using process sheets. Projects will include use of the CNC milling centers and lathes. Appropriate theory and practice of safe work methods will be emphasized.

### 111 Introduction to Fluid Power 3 Credit Hours 4 Billable Contact Hours

Prerequisite: RDG 090 and one year high school algebra

F, W

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.

### 112 Pneumatics 3 Credit Hours 4 Billable Contact Hours

Prerequisite: MECH 111

S

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.

**116 Industrial Plumbing and Pipefitting 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

S

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/pipefitting 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.

**117 Basic Air Conditioning and Refrigeration 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

S

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.

**127 Advanced AC & Refrigeration & Refrigeration Certification 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: MECH 117

S

This course covers advanced air conditioning and refrigeration, theory, application, electrical circuit construction, operation and troubleshooting. The ninth through the 13th week of the course will consist of lecture preparations to pass the EPA Refrigerant Technician Universal Type IV Certification Test, which will be administered on the 14th week of class.

**131 Introduction to Automated Manufacturing 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

F, W

This is a survey course for the world of automation. Included will be automation safety, justification, design and classification, applications, end-of-arm tooling, power sources, future trends and societal impact. Laboratory experiences will include hard wired controls, PLC controls, robot programming and operation through both teach pendants and microcomputers. Basic troubleshooting of automatic controls will be included, with an introduction to fluid power and ladder logic.

**134 Machine Tool Theory 2 Credit Hours  
2 Billable Contact Hours**

Prerequisite: MECH 103

S

This course covers advanced machine tool theory with emphasis on lathes and mills. There will be detailed coverage of machine speeds, feeds, cutter materials, dies, tool geometry, heat treat, threads and thread nomenclature. Students are introduced to the field of computer numerical control (CNC) process. Basic diemaking and use of Machinery Handbook is also covered.

**201 CAD/CAM Milling I 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: MECH 103 and MDTC 160

F, W

This course is an introduction to Computer-Aided Design and Computer-Aided Manufacturing (CAD/CAM) using the latest Mastercam software. Emphasis is on two- and three-dimensional design, tool path generation, and creation of code, using wireframe part geometry. Models will be created to demonstrate surfacing, generating and verifying G & M code relevant to a particular machine post processor. Students will learn all relevant commands to generate part geometry and generate tool path for industry applications. Appropriate theory and practice of safe work methods will be emphasized.

**216 Industrial Plumbing & Pipefitting II 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: MECH 116

S

This course is designed to assist individuals with the understanding and application of plumbing systems, maintenance materials, tools and techniques. Students will be introduced to the basic skills used in the plumbing and pipefitting trades. Emphasis is placed on piping supply and DWV systems, fixture installation and backflow prevention. The information presented will be based on the Michigan International Plumbing Code.

**221 CAD/CAM II (Lathe) 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: MECH 201

F

CAD/CAM Lathe consists of part-oriented tutorials, and practice exercises that provide students with an excellent foundation in Lathe. The material emphasizes the machinability of parts with suggested fixtures, setup sheet and more. CAD/CAM Lathe is ideal for beginners and current Mastercam users. Step-by-step tutorials introduce 2D geometry creation along with detailed coverage of 2D toolpaths such as Face, Rough, Finish, Drilling, Grooving, Grooving on an angle, Inside Boring, Cutoff, Threading, and Canned Cycles for Rough and Finish. Appropriate terminology is used and theory and practice of safe work methods will be emphasized.

**231 CAD/CAM (Milling II) 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: MECH 201

W

This course will build on the CAD/CAM Milling I course in the program. The course covers the latest Mastercam toolpath generation with two- and three-dimensional mechanical part geometry. Import functions for wireframe, solids and complex surfacing will be used. Projects will be more advanced and cover associativity, level management and post processors choice. Students will design and run toolpath and use set up functions with best economical production process planning. Also covered will be dynamic high-speed machining (HSM). Appropriate terminology is to be used and theory and practice of safe work methods will be emphasized.

**MARKETING COMMUNICATIONS (MCOM)**

**201 Principles of Marketing 3 Credit Hours  
3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W, S

The focus of this course is the study of the fundamental marketing principles. Topics include the marketing environment, marketing planning and research, consumer behavior, market segmentation, international marketing and the marketing mix.

## MATERIALS TECHNOLOGY (MATL)

### 101 Industrial Materials 3 Credit Hours 4 Billable Contact Hours

Prerequisite: MATH 090 or qualifying scores on accepted placement tests

F, W

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

### 121 Nuclear Plant Materials 3 Credit Hours 4 Billable Contact Hours

Prerequisite: MATH 090 or qualifying score on accepted placement tests.

F, W

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.

### 215 Metallurgy 3 Credit Hours 4 Billable Contact 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 4 Billable Contact 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)

Effective Winter 2018, there is a 3-year limit on mathematics placement test scores.

Effective Winter 2018, students must achieve a "C" or higher in prerequisite mathematics courses.

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

### 090 Basic Mathematics Skills 4 Credit Hours 4 Billable Contact Hours

Prerequisite: This class does not count toward graduation.

F, W, S

Basic Mathematics Skills will provide instruction in mathematical operations and their applications, with early introduction to integers and algebraic concepts including solving linear equations and inequalities. This approach provides for students the necessary tools to succeed in developmental math and prepares them for future math courses. The content of the course includes operations with integers, ratio, proportion, percent, area, volume, and introduction to variables, algebraic concepts, and solutions to linear

equations and inequalities. There is an 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. This 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 requirement. Internet access is mandatory.

### 092 Beginning Algebra 4 Credit Hours 4 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on accepted placement tests

F, W, S

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 2 Billable Contact Hours

Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on accepted placement tests

F, W, S

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 4 Billable Contact Hours

Prerequisite: MATH 092 or MATH 119 or qualifying score on accepted placement tests

F, W, S

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: ENGL 090 and RDG 090 and MATH 090 or qualifying score on accepted placement tests

F, W

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 accepted placement tests  
F, W, S

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 qualifying score on accepted placement tests  
F, W, S

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 092 or higher or qualifying score on accepted placement tests  
F, W

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 092 or qualifying scores on accepted placement tests within the last 3 years  
F

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: A grade of C or better in MATH 151 or qualifying scores on accepted placement tests  
F, W, S

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: A grade of C or better in MATH 157  
F, W, S

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.

**162 Introduction to Statistics** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: RDG 090 and ENGL 090 and MATH 124 or MATH 126 or MATH 151 or MATH 157 or MATH 159 or MATH 164 or MATH 171 or above or qualifying scores on accepted placement tests  
F, W, S

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 utilized.

**164 Precalculus** **4 Credit Hours**  
**4 Billable Contact Hours**  
Prerequisite: A grade of C or better in MATH 151 or qualifying scores on accepted placement tests  
F, W, S

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**  
**3 Billable Contact Hours**  
Prerequisite: MATH 156  
W

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**  
**4 Billable Contact Hours**  
Prerequisite: A grade of C or better in MATH 159 or MATH 164 or qualifying score on accepted placement tests  
F, W, S

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**  
**4 Billable Contact Hours**

Prerequisite: A grade of C or better in MATH 171

F, W, S

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**  
**3 Billable Contact Hours**

Prerequisite: A grade of C or better in MATH 171

W

Matrix operations, echelon form, solutions of systems of linear equations, basics of vector spaces, subspaces, and linear transformations: span, linear independence, bases, dimension, matrix representation of linear transformations; determinants; characteristic polynomials, eigenvalues, eigenvectors, Jordan canonical form, inner-product spaces (including orthogonal polynomials); unitary, self-adjoint, and orthogonal matrices, least squares method, discrete Markov processes; bilinear and quadratic forms; introduction to the spectral theorem.

**271 Calculus III** **4 Credit Hours**  
**4 Billable Contact Hours**

Prerequisite: A grade of C or better in MATH 172

F

Topics include vector algebra and functions; analytic geometry of curves (Frenet-Serret equations), planes, surfaces, and solids; functions of several variables and partial derivatives, optimization problems, Lagrange multipliers; curl, divergence, and gradient; line, surface, and volume integrals; vector fields and integration; flux, Green's theorem, Stokes' theorem, and the divergence theorem.

**273 Introduction to Differential Equations** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: A grade of C or better in MATH 172

W

Topics include: First-order equations, including solution methods, existence, uniqueness and numerical techniques; second order equations, including constant coefficients, reduction of order, Laplace transform, series, variation of parameters and systems of equations (eigenvectors and eigenvalues, fundamental matrix solutions, equilibrium points, qualitative behavior, phase plane diagrams, applications of differential equations to scientific, engineering and economic problems).

**MECHANICAL DESIGN TECHNOLOGY (MDTC)**

**109 Mechanical Blueprint Reading** **2 Credit Hours**  
**2 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying scores on accepted placement tests

F, W

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**  
**3 Billable Contact Hours**

Prerequisite: MDTC 101 or MDTC 109 or MDTC 151 or MDTC 160 or MDTC 161

S

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 conveyers.

**152 Descriptive Geometry** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: MDTC 160 or MDTC 151

W

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**  
**6 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

F, W

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 Design (CAD) software. A major emphasis will be placed on current drafting standards and procedures.

**161 Mechanical Drafting and CAD II** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: MDTC 160

F, W

This course is designed as a continuation of the Mechanical Drafting and CAD I course. Sketching, detail drawings, assembly drawings and working drawings will be taught using both sketching techniques and computer aided design (CAD) software. 3D concepts and solid modeling will also be included in this course.

**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

F

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 commercial details, machine from solid details, casting details and weldment details. This course will pull together the skills acquired in MDTC 121 and MDTC 151 and will enable the student to develop and critique their research skills. CAD lab is required to complete drawings.

**226 Geometric Dimensioning and Tolerancing** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: MDTC 160

F

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 Y14.5M-2009 standard. Emphasis is placed on how GD&T is utilized by engineering, manufacturing and inspection departments.

**228 Introduction to SOLIDWORKS-CSWA 3 Credit Hours  
4 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

F, W

The Introduction to SOLIDWORKS - CSWA 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

F, W

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.

**236 Rapid Prototyping 4 Credit Hours  
6 Billable Contact Hours**

Prerequisite: MDTC 161 and MDTC 228

F

In this course, students will learn about the evolution of digital fabrication with a full overview of the design industry and related technologies. Each hands-on, project-based learning (PBL) exercise will allow students to design and fabricate 3D objects using computer-aided design (CAD) software and 3D printers. They will experience the design process and become familiar with the advantages and limitations of each 3D printing technology in terms of precision, resolution and material capabilities. Students will analyze real industry cases and apply 3D printing technology appropriately while gaining hands-on experience with leading 3D printing technologies employed in design today.

**240 Tool and Die Design 4 Credit Hours  
6 Billable Contact Hours**

Prerequisite: MDTC 152 and MDTC 226 and MDTC 228

W

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.

**242 Mechanical Design Capstone Project 4 Credit Hours  
6 Billable Contact Hours**

Prerequisite: MDTC 226 and MDTC 228

W

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/or 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 & Technology 3 Credit Hours  
3 Billable Contact Hours**

Prerequisite: RDG 090 and MATH 090 or qualifying scores on accepted placement tests or high school algebra.

F, W

This course introduces the field of engineering technology. Concepts related to the engineering profession are presented, including economics, ethics, research, problem solving, communication and typical engineering problems. A major component of the course includes presentation of mathematic 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 typical problems that were solved, 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.

**160 Math Applications in Engineering Tech 2 Credit Hours  
3 Billable Contact Hours**

Prerequisite: MATH 164 or MATH 157 and MATH 159

F

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. Topics range from experimental data reduction to numerous examples from mechanical and electrical systems.

**170 Introduction to Parametric CAD/CATIA 3 Credit Hours  
6 Billable Contact Hours**

Prerequisite: MDTC 160 or equivalent CAD experience

W

This is an introductory course for all new users of CATIA V5. Students will gain an understanding of the CATIA V5 interface and how to use CATIA V5 to create solid models of parts, assemblies and drawings. Parts will be managed in the context of an assembly. This is a hands-on course in which students produce simple parts drawings and assemblies.

**172 Computer Aided Design UG/NX 4 Credit Hours  
6 Billable Contact Hours**

Prerequisite: MDTC 121 or MDTC 160 or equivalent

W, S

In this course, students learn concepts in the use of profiles and parametric features as building blocks for 3D solid models using the Unigraphics/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 Machine Design** **4 Credit Hours**  
**6 Billable Contact Hours**  
Prerequisite: METC 220, METC 170 (or equivalent) and METC 160

W

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 164 or MATH 171 or MATH 172 or METC 160 qualifying scores on accepted placement tests

F, W

This course presents fundamental techniques and processes used to determine the forces on members, the stresses developed in such members and the relation of these stresses to potential failure of the member. The focus is on static planar systems of forces and the resulting stresses. Mathematical tools required for the modeling of components under load, computer based implementation, two dimensional force systems, trusses and basic beam deflection are presented.

**234 Thermodynamics and Fluid Sciences** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: MATH 124 or MATH 164 or METC 160 or MATH 157 and MATH 159

W

This course presents the fundamental concepts of thermodynamics, heat transfer, and fluid science. The focus is on industrial applications and their basis in the thermodynamic theory and fluid mechanics. Included are heat capacity, heat transfer, phase changes, thermal cycles, efficiency, power generation, refrigeration, fluid flow, and pumping. Lab exercises will demonstrate some of these 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

F, W

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.

## METEOROLOGY (MET)

**151 Introduction to Meteorology and Climate** **4 Credit Hour**  
**5 Billable Contact Hours**

Prerequisite: RDG 090, ENGL 090 and MATH 090 or qualifying scores on accepted placement tests

W, S

This course provides an introduction to atmospheric processes that create daily weather patterns. Students will study topics such as heat and energy, daily and seasonal temperatures, humidity, cloud development and precipitation types, air pressure and winds, development of pressure systems and fronts, weather forecasting and severe weather. Additionally, special emphasis on local weather patterns, climatology and climate change will be discussed.

## MUSIC (MUSIC)

**150 Agora Chorale** **1 Credit Hour**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W

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**  
**3 Billable Contact Hours**

Prerequisite: MUSIC 150

F, W

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.

**154 College-Community Symphony Band** **1 Credit Hour**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

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**  
**3 Billable Contact Hours**

Prerequisite: MUSIC 154

F, W

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.

**1611 Applied Music Instrument** **1 Credit Hour**  
**1 Billable Contact Hour**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

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. 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. Permission 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**  
**1 Billable Contact Hour**  
Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

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. 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. Permission is required to register. The purpose of this course is to improve the student's ability to perform musically.

**162I Applied Music Instrument** **1 Credit Hour**  
**1 Billable Contact Hour**

Prerequisite: MUSIC 161I

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. 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. Permission 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**  
**1 Billable Contact Hour**

Prerequisite: MUSIC 161V

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. 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. Permission is required to register. The purpose of this course is to improve the student's ability to perform musically.

**170 Introduction to Music Theory I** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F

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.

**250 Agora Chorale** **1 Credit Hour**  
**3 Billable Contact Hours**

Prerequisite: MUSIC 151

F, W

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.

**251 Agora Chorale** **1 Credit Hour**  
**3 Billable Contact Hours**

Prerequisite: MUSIC 250

F, W

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.

**254 College-Community Symphony Band** **1 Credit Hour**  
**3 Billable Contact Hours**

Prerequisite: MUSIC 155

F, W

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.

**255 College-Community Symphony Band** **1 Credit Hour**  
**3 Billable Contact Hours**

Prerequisite: MUSIC 254

F, W

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.

**261I Applied Music Instrument** **1 Credit Hour**  
**1 Billable Contact Hour**

Prerequisite: MUSIC 162I

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. 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. Permission is required to register. The purpose of this course is to improve the student's ability to perform musically.

**261V Applied Music Voice** **1 Credit Hour**  
**1 Billable Contact Hour**

Prerequisite: MUSIC 162V

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. 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. Permission is required to register. The purpose of this course is to improve the student's ability to perform musically.

**262I Applied Music Instrument** **1 Credit Hour**  
**1 Billable Contact Hour**

Prerequisite: MUSIC 261I

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. 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. Permission is required to register. The purpose of this course is to improve the student's ability to perform musically.

**262V Applied Music Voice** **1 Credit Hour**  
**1 Billable Contact Hour**

Prerequisite: MUSIC 261V

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. 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. Permission 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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

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. This course is a satisfier course for the Global Studies Degree Designation.

**268 Popular Music in America** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 and MATH 151 or qualifying scores on accepted placement tests

F

This course presents fundamental principles used throughout the nuclear industry as an essential part of daily operations. Focus areas include an introduction to nuclear power plants, human performance enhancement fundamentals, introduction to the systematic approach to training, on-the job training, task performance evaluation, foreign material exclusion overview of a corporate safety manual, the concept of the safety conscience work environment, conservative decision making and Generation IV reactors.

**102 Introduction to Non-Destructive Testing** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F

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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests and NUET 102

W

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**

**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests and NUET 102

W

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 I** **2 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement 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 II** **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 I** **2 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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 II** **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. It 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

F

This course will introduce students to various types of electrical and mechanical drawings commonly used in nuclear power plants. These drawings will be the fundamental tools used to introduce 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, power production systems such as Main Steam and Feedwater, and the electronic systems provide indications and automated plant protection. Students will be challenged to understand many of the design attributes of these systems and to directly relate those attributes using the various system drawings. Certain significant operating experience issues will be introduced and 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 examples of component electrical controls. This course will also introduce 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 220

S

This course is held in cooperation with DTE's Fermi 2 Nuclear Power Plant Training Center. The course consists of 40 hours of training activities held on-site at Fermi 2. Training is conducted by instructors from the Nuclear Training Center. The emphasis is on hands-on maintenance training in the same facilities used by plant personnel. Training takes place over five consecutive days. It includes a tour of the control room simulator and an instrumentation and control walkdown in the plant.

**220 Power Plant Components**

**3 Credit Hours**

**4 Billable Contact Hours**

Prerequisite: NUET 100

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.

**230 Plant Systems II 3 Credit Hours****4 Billable Contact Hours**

Prerequisite: NUET 100 and NUET 130

W

This course is a continuation of Nuclear Plant Systems 1. The course will examine chemistry control systems, electrical power generation systems and emergency and backup systems. Systems specific to pressurized water reactors 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****4 Billable Contact 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, and case studies.

**NURSING (NURS)****CNA 100 Certified Nurse Aide 6 Credit Hours****10 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W, S

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.

**100 RN Nursing Student Success Course 1 Credit Hour****1 Billable Contact Hour**Prerequisite: Admission to the RN program  
Corequisite: NURS 103

F, W

This optional course is designed to be taken concurrently with the first nursing course, NURS 103, Fundamental Nursing Care, and 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****15 Billable Contact Hours**Prerequisite: Acceptance into the nursing program, ENGL 151, PSYCH 151, BIOL 257  
Corequisite: BIOL 258, 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.

**105 Medical Surgical Nursing Care I 5 Credit Hours****9.5 Billable Contact Hours**

Prerequisite: NURS 103, BIOL 258, ENGL 152

Corequisite: HLTSC 120 (Must be successfully completed prior to or concurrently) NURS 110 unless course already passed.

F, W

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 3.5 Credit Hours****6 Billable Contact Hours**

Prerequisite: NURS 103, BIOL 258, ENGL 152

Corequisite: HLTSC 120 (must be completed prior to or concurrently). NURS 105 unless course already passed.

F, W

This course incorporates a holistic approach in the management of care for patients with mental 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 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 Credit Hours****7 Billable Contact Hours**

Prerequisite: NURS 105, NURS 110, HLTSC 120

Corequisite: NURS 205, NURS 210 unless course(s) already passed.

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. Advanced 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 weekly utilizing the hospital, simulation lab and the campus laboratory.

**205 Pediatric Nursing Care 3.5 Credit Hours****6 Billable Contact Hours**

Prerequisite: NURS 105, NURS 110, HLTSC 120

Corequisite: NURS 204, NURS 210 unless course(s) 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 advanced clinical reasoning and effective communication while implementing the nursing process to provide safe quality care. During this course, clinical content will be applied weekly utilizing the hospital, the outpatient community setting, and the campus laboratory.

**208 Medical Surgical Nursing Care II 8.5 Credit Hours**  
**14 Billable Contact Hours**  
Prerequisite: NURS 204, NURS 205, NURS 210

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 weekly utilizing the hospital, community settings and campus laboratory.

**210 Nursing Leadership and Management 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: NURS 105, NURS 110, HLTSC 120  
Corequisite: NURS 204, NURS 205 unless courses already passed.

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 2.5 Credit Hours**  
**7 Billable Contact Hours**

Prerequisite: NURS 208

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 throughout the course.

## ONLINE COURSE ORIENTATION (ONL)

**001 Online Course Orientation 0 Credit Hour**  
**0 Billable Contact Hour**

F, W, S

Students who have never completed an online course at MCCC are now required to complete an online orientation course (ONL-001). If you do not successfully complete the online orientation course prior to the first day of the semester, you will be de-registered from your online course(s). If you have any questions or need assistance with you ONL-001 course, contact the e-Learning department at 743.384.4328 or online at [elearning@monroeccc.edu](mailto:elearning@monroeccc.edu).

## PHILOSOPHY (PHIL)

**151 Introduction to Logic 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement 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 score on accepted placement 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. This course is a satisfier course for the Global Studies Degree Designation.

**253 Introduction to the Philosophy of Religion 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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.

**254 Introduction to Medical Ethics 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 151

F, W

This course presents an introductory inquiry into the study and application of philosophical ethics to the practice of medicine. Different moral theories and modes of moral decision-making will be examined and implemented in order to navigate current issues in health care, though no particular moral view will be stressed over another. Topics to be surveyed will include, but are not limited to, paternalism and patient autonomy, confidentiality, abortion, euthanasia, informed consent, conscientious objection, genetic engineering, and justice in health care. This course will include writing assignments.

## PHYSICAL SCIENCE (PHYSC)

**151 Physical Science 4 Credit Hours**  
**5 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 and MATH 092 or MATH 150 or qualifying scores on accepted placement tests

W

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 qualifying score on accepted placement 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 scores on accepted placement tests. Recommended: MATH 157 and MATH 159 or MATH 164.  
F, W

This course is a liberal arts course in the fundamental principles of physics. Units include measurement, kinematics, mechanics, rotational motion, fluids, temperature and heat, 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. Development of 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. This course requires laboratory work.

**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, quantum, atomic, and nuclear physics. This course requires laboratory work.

## **POLITICAL SCIENCE (POLSC)**

**151 Introduction to Political Science** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests  
F, W, 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. This course is a satisfier course for the Global Studies Degree Designation when taught by select faculty. See the Global Studies Degree Designation Completion Form for a list of instructors.

**158 Introduction to Political Theory** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests  
F, W

This course surveys the great western political thinkers and their ideas regarding justice. From Plato's Republic to Rawl's Theory of Justice, this course traces the development of western political thought from Ancient Greece to contemporary America. Students will learn how contemporary ideas regarding justice developed from ancient societies, how these ideas influenced historical change and the diverse cultural background of these ideas (e.g. Ancient Greek, Italian, French, British and American). Students will also learn how to reflect critically on these complex ideas, relating them to contemporary political issues, engaging in a normative critique of contemporary political and social institutions, and expressing these reflections through both oral and written communication. This course is a satisfier course for the Global Studies Degree Designation.

**211 Introduction to Comparative Politics** **3 Credit Hours**  
**3 Billable Contact Hours**  
Prerequisite: POLSC 151  
F, S

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**  
**3 Billable Contact Hours**  
Prerequisite: POLSC 151  
W

This course is a study of state and local government units, including types of organizations, their structures, 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**  
**3 Billable Contact Hours**  
Prerequisite: POLSC 151 or HIST 154 or HIST 155  
W

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.

## PN TO RN PROGRAM OPTION (PNRN)

### 100 LPN Transition to RN Practice 3 Credit Hours 4 Billable Contact Hours

Prerequisite: Acceptance into the PN to RN program. ENGL 151, PSYCH 151, BIOL 257, BIOL 258  
Corequisite: ENGL 152 or HLTSC 120: In order to complete the program according to the plan of study, students will need to have one of these courses completed prior to beginning the first LPN to RN course. The remaining course must be completed during the spring semester concurrent with PNRN 100.

S

This course will advance the Licensed Practical Nurse into the Registered Nurse role. Building upon the foundation of the LPN certification, the course incorporates a holistic approach in the management of care for the adult patient while supporting the student's professional development and transition into the practice of registered nursing. Expanding nursing judgment, integral to the nursing process, will be emphasized as a means of facilitating care of the adult patient. Special focus will be placed on exploring the role of the professional registered nurse in providing safe quality care within a multidisciplinary health care team. During this course, clinical content will be applied utilizing case scenarios, a Community Aging Project, and the campus laboratory.

### 110 Mental Health Nursing Care for the LPN 3.5 Credit Hours 6 Billable Contact Hours

Prerequisite: PNRN 100, ENGL 152, HLTSC 120

S

This course incorporates a holistic approach in the management of care for patients with mental health problems while supporting the student's professional development. The student will use the foundation of the LPN certification. Nursing judgment and effective communication will be advanced utilizing the nursing process in providing safe quality care for patients with mental health needs. Students will focus on legal and ethical considerations including end of life, advanced directives, and informed consent in addition to mental health concepts. Students will investigate the psychosocial roles of patients and the effects of mental illness on these roles while applying their newly acquired knowledge of the RN scope of practice in the classroom, laboratory, and clinical settings. Clinical will be held weekly in the acute psychiatric care setting, select community settings, and campus laboratory.

## PRACTICAL NURSING (PNUR)

### 100 PN Student Nurse Success 1 Credit Hour 1 Billable Contact 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 17 Billable Contact Hours

Prerequisite: ENGL 151, PSYCH 151, BIOL 257, MATH 092 or qualifying score on accepted placement tests, and Admission to Practical Nursing Program  
Corequisite: HLTSC 120, BIOL 258 must be successfully completed prior to or concurrently

W

This course is the foundation from which other nursing courses build and expand. The focus of the course is on meeting the needs of patients experiencing a change in health status and the provision of basic nursing care. Nursing theory and the program's philosophy

are introduced. Students are introduced to the nursing process as a basis for planning and implementing care of the adult patient. Special focus is placed on the diverse needs of the older adult. Instruction is provided in the classroom, nursing skills lab, and clinical settings.

### 123 Mental Health Concepts for Practical Nursing 2 Credit Hours 2 Billable Contact Hours

Prerequisite: PNUR 121, HLTSC 120, BIOL 258  
Corequisite: PNUR 124 and PNUR 130 (Must be successfully completed prior to or concurrently)

S

This 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 patients with various psychiatric and behavioral disorders, and maladaptive behaviors. The course discusses the application of psychological theories and therapeutic approaches in assisting patients to develop healthy coping mechanisms for managing various mental health needs. Treatment modalities and psychotherapeutic medications are discussed. Instruction will be provided in the classroom and the online environment. Students will apply mental health principles and concepts to the general patient population in all settings.

### 124 Practical Nursing Care of Adults I 6 Credit Hours 11 Billable Contact Hours

Prerequisite: PNUR 121, HLTSC 120, BIOL 258  
Corequisite: PNUR 123 (Must be successfully completed prior to or concurrently)

S

The course builds on previously learned concepts and focuses on the use of clinical problem-solving skills and the nursing process. The goal is to assist adults with common medical-surgical problems and select acute and chronic disorders in meeting health care needs. Instruction is provided in the classroom, nursing skills lab, and clinical settings.

### 127 Practical Nursing Care of Adults II 5 Credit Hours 9 Billable Contact Hours

Prerequisite: PNUR 130  
Corequisite: PNUR 128 (Must be successfully completed prior to or concurrently)

F

The course builds on previously learned concepts and focuses on the use of clinical problem-solving skills and the nursing process. The goal is to assist adults with more complex medical-surgical problems and select acute and chronic disorders in meeting health care needs. Instruction is provided in the classroom, nursing skills lab, and clinical settings.

### 128 Issues in Practical Nursing 2 Credit Hours 2 Billable Contact Hours

Prerequisite: PNUR 130  
Corequisite: PNUR 127 (Must be successfully completed prior to or concurrently)

F

This course will focus on issues related to practice of the licensed practical nurse, such as legal and ethical practice issues requiring clinical judgment, 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** 3 Credit Hours  
8.5 Billable Contact Hours  
Prerequisite: PNUR 127 and PNUR 128

F

This capstone course focuses on the leadership role of the licensed practical nurse in managing care of multiple patients in the clinical setting. The major units discussed include the LPN role as manager of patient care and as manager of staff in extended care. Students are assigned a licensed nurse preceptor in the clinical setting with nursing faculty oversight. Students work collaboratively with preceptors to assume increased responsibility for multiple patients and the supervision of certified nursing assistants. The course prepares the student for beginning practice in the LPN leadership role upon program completion. Instruction is provided in the classroom, nursing skills lab, and clinical settings.

**130 Maternal and Child Care for the Practical Nurse** 4 Credit Hours  
6.5 Billable Contact Hours  
Prerequisite: PNUR 124  
Corequisite: PNUR 123 (must be successfully completed prior to or concurrently)

S

This course will explore the diverse nursing care of the maternal patient with a focus on common childbearing complications and the newborn. Students will also examine common pediatric diseases and conditions. Students will learn to apply growth and development concepts to the care of childbearing patients, pediatric patients, and their families. Health promotion and maintenance for both the child and family will be addressed. Adapting previously learned nursing care to the newborn, child, and family will be emphasized. Instruction is provided in the classroom, nursing skills lab, and clinical setting.

## PSYCHOLOGY (PSYCH)

**151 General Psychology** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: ENGL 090, RDG 090, and MATH 090 or higher or qualifying scores on accepted placement tests

F, W, S

This course provides an overview of major subject areas in psychological science. We will explore several areas of psychology in two key ways: by understanding how scientific knowledge and principles are generated and evaluated and by exploring the implications of psychology's findings. Principles of scientific investigation, including scientific theories, hypotheses, methods, and evaluating results will be applied to the study of human behavior and experience, spanning content areas ranging from cellular to ecological, including biological psychology, sensation, perception, human development, cognition, learning, motivation, emotion, stress, and social processes. We will also apply this knowledge and these skills to psychology and other subjects. The course is designed to prepare students for future psychology classes and to enhance critical thinking skills for other academic studies, for careers, and for everyday life.

**152 Psychology of Personality/Adjustment** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: PSYCH 151

F, W

This course is an introduction to applying psychology to the individual, an exploration of our experiences in the contexts of life's changes and challenges. Students will be exposed to scientific theories and research in personality and adjustment psychology. We will use personality, stress, psychopathology, and other psychology perspectives in our examination of personal adjustment. The course's scope includes a wide variety of contexts, including: psychological and physical health, personal relationships, education, work/career, and community. The course provides opportunities for scholarship as well as personal reflection and growth.

**251 Child Psychology** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: PSYCH 151

F, W, S

This course is an exploration of child development from conception through adolescence. Students will be exposed to scientific theories and research related to the relevant domains of child development including physical, cognitive, social, intellectual, perceptual, personality and emotional growth. As we examine how children develop over time, we will simultaneously explore and reflect upon the complexity and uniqueness of each child and each child's experiences as well as commonalities and patterns among children. The course provides opportunities for scholarship as well as personal and professional reflection and growth.

**253 Social Psychology** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: PSYCH 151

F, W

This course emphasizes the individual as a member of society. Social psychology focuses on how individuals and groups are impacted by, and have an impact on, their social worlds. Social psychology encompasses a broad range of topics, including such areas as conformity, attitudes, gender, aggression, prejudice and discrimination, and helping behavior, and helping behavior, including experiences, applications, and studies of these in the U.S. and around the world. In this course, students will examine the theories and research in social psychology as both scientists and as members of our own social groups. This course is a satisfier course for the Global Studies Degree Designation.

**254 Life Span Psychology** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: PSYCH 151

F, W, S

This course is an exploration of human development across the life span from conception until death. Students will be exposed to scientific theories and research of the relevant domains of human development including physical, cognitive, social, intellectual, perceptual, personality and emotional growth. As we examine how humans develop over time, we will simultaneously explore and reflect upon the complexity and uniqueness of each person and each person's experiences as well as commonalities and patterns among people. The course provides opportunities for scholarship as well as personal reflection and growth.

**257 Psychology of Human Sexuality** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: PSYCH 151

W

This course offers a survey of psychological perspectives on the interdisciplinary field of human sexuality. Concepts examined in this course include sexual response, sex, gender, sexual orientation, sexual behavior, attractions, communication, and sexual health. The foundation for inquiries into these topics is empirical research.

**258 Abnormal Psychology** 3 Credit Hours  
3 Billable Contact Hours  
Prerequisite: PSYCH 151

F

This course offers an overview of the psychological study of abnormal behavior and psychopathology. Concepts examined in this course will include the biopsychosocial etiology, prognosis and treatment of the major categories of psychological and behavioral health issues. Empirical research and clinical case studies will serve as the foundation for understanding course content.

## QUALITY SYSTEMS TECHNOLOGY (QSTC)

### 105 Fundamentals of Gauging and Basic SPC 2 Credit Hour 3 Billable Contact Hour

Prerequisite: MATH 090 and RDG 090 or qualifying scores on accepted placement tests

This course is an introduction to basic measurement techniques and a tutorial on use and calibration of basic dimensional measuring and test equipment; for example, inside and outside micrometers, calipers, gage blocks, dial indicators, depth micrometers, height gages, surface plates, snap gages, and some other dimensional measurement devices. This course includes an overview of metrology in general with a description of its impact on society and our lives in general. Also, this course will provide a basic understanding of fundamental measurement theory, and statistical process control (SPC) application and theory; this includes SPC topics such as, run charts, control charts, a focus on continuous improvement, and the design of experiments.

### 115 Statistical Process Control 3 Credit Hours 3 Billable Contact Hours

Prerequisite: MATH 119. MATH 124 or MATH 151 or higher highly recommended

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 design of experiments (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 accepted placement 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: MATH 090 and RDG 090 or qualifying scores on accepted placement tests. MATH 119 highly recommended

This course is an introduction to the fundamentals of dimensional measurement, production gages and gaging techniques. Interpretation of geometric tolerances will also be covered, with respect for their implications for inspection. Measurement techniques will emphasize proper use of and setup of equipment including hand tools, gage blocks, sine bars and sine plates, surface plates and accessories, analog and digital measuring devices, surface profilometers, precision levels, optical comparator, measuring microscope, protractors, pneumatic gages, coordinate measuring machines and articulating arm portable measuring systems. It also provides a basic understanding of various metrology terms and concepts.

### 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 and use of Articulating Arm operation using point cloud software, and laser scanning inspections of parts.

### 220 Calibration and Gage R&R 3 Credit Hours 4 Billable Contact Hours

Prerequisite: MATH 090 and RDG 090 or qualifying scores on accepted placement tests. QSTC 150 or consent of instructor

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 calibration software.

### 230 Documentation & Audit Preparation 3 Credit Hours 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, ISO 9001, ISO 9002, ISO 9003, QS9000 (including the TE supplement), TS16949, ISO IEC 17025, NCSL/ISO Z 540.3, 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 placement test score and a counselor's consultation provide the basis for selecting this reading instruction. This course does not count toward graduation. 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 placement 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 9 Billable Contact Hours

Prerequisite: Admission into the Respiratory Therapy program. Corequisite: RTH 102A, RTH 104 and BIOL 258

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, basic patient assessment skills, medical gas and aerosol administration, equipment processing, employee/patient safety, pulmonary medications, microbiology concepts and an orientation to clinical sites.

**102A Pharmacology for Respiratory Therapists I** **2 Credit Hours**  
**2 Billable Contact Hours**

Prerequisite: Admission into the Respiratory Therapy Program  
Corequisite: RTH 100, RTH 104 & BIOL 258 (must be successfully completed prior to or concurrently)

F

This course provides an overview of general pharmacology principles and various drug knowledge such as bronchodilators and anti-inflammatory agents. Emphasis will be made on drugs used in management of cardiopulmonary conditions as well as a thorough treatment of drugs administered directly by respiratory therapists.

**102B Pharmacology for Respiratory Therapists II** **1 Credit Hours**  
**1 Billable Contact Hours**

Prerequisite: RTH 100, RTH 104, RTH 102A and BIOL 258  
Corequisite: RTH 110, RTH 111, RTH 116

F

This course provides an overview of general pharmacology principles and various drug categories that surround the care of advanced 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.

**104 Cardiopulmonary Assessment** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: Acceptance into the Respiratory Therapy program.  
Corequisite: RTH 100, RTH 102A, BIOL 258

F

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**  
**7 Billable Contact Hours**

Prerequisite: RTH 100, RTH 102A, RTH 104, BIOL 258  
Corequisite: RTH 102B, RTH 111, RTH 116

W

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**  
**14 Billable Contact Hours**

Prerequisite: BIOL 258, RTH 100, RTH 102A, RTH 104  
Corequisite: RTH 102B, RTH 110, RTH 116

W

This course provides a hospital experience in which classroom theory and laboratory skills can be exercised on hospital patients. Skills include accurate electronic medical record charting, patient respiratory assessment, oxygen therapy, a wide range of bronchial hygiene therapies, bedside diagnostic therapies, ECGs, arterial blood gases and equipment processing. Weekly discussion seminars on campus will facilitate student learning.

**116 Cardiopulmonary Pathophysiology** **4 Credit Hours**  
**4 Billable Contact Hours**

Prerequisite: BIOL 258, RTH 100, RTH 102A, RTH 104  
Corequisite: RTH 102B, RTH 110, RTH 111

W

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** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: RTH 102B, RTH 110, RTH 111, RTH 116  
Corequisite: RTH 121

S

Mechanical ventilation topics are continued in this classroom and laboratory course. Topics include various ventilation brands of ventilators and their modes, cycling mechanisms, alarms and features. In addition, adjustments needed for adult patients with oxygenation, ventilation and acid-base pulmonary management challenges will be presented.

**121 Respiratory Care Clinical Practice II** **2 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: RTH 102B, RTH 110, RTH 111, RTH 116  
Corequisite: RTH 120

S

This clinical course provides a transition experience from basic respiratory care to intermediate care in the intensive care unit. Skills and techniques learned in RTH 111 will be continued and students will begin entry-level pulmonary management for general patients on mechanical ventilation. This will include airway care, initiation, assessment, management and liberation from mechanical ventilation. Weekly seminars on campus will facilitate student learning.

**211 Respiratory Care Clinical Practice III** **4.5 Credit Hours**  
**14 Billable Contact Hours**

Prerequisite: RTH 120, RTH 121  
Corequisite: RTH 212, RTH 214 and RTH 216

F

This clinical course allows students to expand experiences with the pulmonary management of adult patients on mechanical ventilation. Rotations will be at multi-intensive care unit medical centers in the Detroit, Ann Arbor and Toledo areas. Students will care for critically ill patients under the supervision of clinical instructors and preceptors. Emphasis includes patient assessment, adjustments to settings, and developing a rapid response to changing conditions of a wide variety of diseases and conditions. Weekly seminars on campus will facilitate student learning.

**212 Advanced Cardiopulmonary Anatomy & Physiology** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: RTH 120, RTH 121  
Corequisite: RTH 211, RTH 214 and RTH 216

F

This course advances the student's knowledge of cardiopulmonary anatomy and physiology. The cardiac sections cover gross and histologic cardiovascular anatomy, neural/endocrine control of cardiac function, hemodynamics, microcirculatory disorders and a review of common cardiac arrhythmias. The pulmonary section covers bronchopulmonary anatomy, gas diffusion, blood flow, ventilation/perfusion relationships, gas transport, mechanics and neural control of ventilation, and lung responses to changing environments and conditions.

**214 Adult Critical Care Management** **3 Credit Hours**  
**4 Billable Contact Hours**

Prerequisite: RTH 120, RTH 121  
Corequisite: RTH 211, RTH 212 and RTH 216

F

This classroom and laboratory course covers the cardiopulmonary equipment, techniques and management theory for the adult patient in an intensive care unit. Topics include advanced concepts in ventilation techniques and management of the adult patient in a variety of specialty intensive care units. Laboratory topics will cover important skills involved with Advanced Cardiac Life Support, ventilation modes, arterial lines, chest tubes and other technical skills needed by a registered respiratory therapist.

**216 Neonatal/Pediatric Management 2 Credit Hours**  
**2 Billable Contact Hours**

Prerequisite: RTH 120, RTH 121  
Corequisite: RTH 211, RTH 212 and RTH 214

F

This classroom and lab course covers topics including fetal growth and development, cardiopulmonary birth defects, patient assessment, clinical management of neonatal and pediatric diseases/conditions, and commonly encountered equipment and ventilators in neonatal and pediatric intensive care units. Laboratory topics will include Neonatal Resuscitation Program concepts, ventilation modes, oscillators, hyperinflation technologies, airway care and other skills associated with this specialty patient population.

**221 Respiratory Care Clinical Practice IV 4 Credit Hours**  
**13 Billable Contact 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 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**  
**2 Billable Contact 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 2 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RTH 211, RTH 212, RTH 216  
Corequisite: RTH 221, RTH 222

W

This course covers a variety of advanced outpatient and inpatient diagnostic and clinical practice guideline topics as a companion course to RTH 221, including pulmonary function, exercise, sleep-disordered breathing testing protocols, asthma and COPD management clinical practice guidelines, organ and tissue donor management protocols, mass casualty emergency preparedness procedures and smoking cessation counseling training.

**SOCIAL WORK (SWK)**

**106 Child Welfare 3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

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**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F, W

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**

F, W

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**

F, W

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**

F, W

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**

F, W

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: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W, S

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 accepted placement 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.

**160 Social Gerontology** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

F

This course focuses on the aged as a social subculture of the United States. The course addresses the change of social roles and status of the aged in relation to family and social institutions while addressing public policy issues of an aging population. Special attention will be given to world cultures, 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 score on accepted placement 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

F, 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.

**253 Race and Ethnicity** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement tests

F

This course is an introduction to the sociological study of race and ethnicity. Students will be exposed to the historical and contemporary factors contributing to the social construction of these phenomena. Besides identity and group formation, this course explores how race and ethnicity have consistently played a role in social and institutional discrimination-including in the areas of economics, education, health, incarceration, and politics. Course content has been selected to help students see the impact of race and ethnicity on socioeconomic standing in contemporary American society. Emphasis will also be placed on racial and ethnic relations in Europe and the Global South. This course is a satisfier course for the Global Studies Degree Designation.

**SPANISH (SPAN)**

**151 Elementary Spanish I** **4 Credit Hours**

**4 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement 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 score on accepted placement tests

F, W, S

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.

**152 Public Speaking** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: SPCH 151

W

This course is designed as an intensive study of the principles of effective public speaking. Focus is placed upon improving speech skills in a variety of public speaking situations.

**155 Interpersonal Communication** **3 Credit Hours**

**3 Billable Contact Hours**

Prerequisite: SPCH 151

F, W

Students will explore the role that communication plays in the evolution of relationships in friendship, a professional setting, marriage/romance and family. Students will practice and develop effective interpersonal skills such as self-disclosure, conflict resolution and ethical communication by working with a partner, in small groups and an open-discussion forum.

**255 Nonverbal Communication** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: SPCH 151

F

This course studies the use and meaning of the language of body movement and gestures, facial expressions, eye contact, clothing, space, etc., as related to the communication process in an attempt to correlate these nonverbal behaviors with underlying conscious/unconscious feelings, attitudes, emotions, mood and state. Students will be provided with the knowledge of learning and using nonverbal communication in interpersonal relations.

**THEATER (THEA)**

**151 Introduction to Theater** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: ENGL 090 and RDG 090 or qualifying score on accepted placement tests

F, W

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. This course is a satisfier course for the Global Studies Degree Designation.

**152 Directing/Production Techniques** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: THEA 151

W

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.

**161 Theater Workshop** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: Instructor's approval

W

Theater Workshop offers an opportunity to study the basics of theater production with special emphasis on the practical crafts of theater (acting, directing, set design and construction, lighting, sound, costuming and management activities). Through practical experience with particular productions and related possible projects, the relationships among some of these elements may be studied. This course enables the student who has the requisite background in theater to focus upon individual theater projects and to learn more about the varieties of theatrical experience and the processes of theatrical production.

**251 Fundamentals of Acting** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying score on accepted placement tests

W

This course is designed to improve acting techniques through the use of exercises and scenes from world drama. The course will be supplemented by work on the production of a long scene, one-act or full-length play. If possible, a public presentation of students' work will be made.

**WELDING (WELD)**

**100 Introduction to Welding Processes** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

F, W, SU

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. The student will learn welding vocabulary, welding theory, safe handling practices and set-up of all related welding equipment. Students will weld using each process on carbon steel. Welding/Cutting processes covered (including laboratory applications) include: Oxy-Fuel Cutting (OFC), Plasma Arc Cutting (PAC), Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), and Gas Metal Arc Welding (GMAW).

**101A Introduction to GMAW** **2 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

F, W

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.

**101B Basic SMAW** **2 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement 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

Advanced Shielded Metal Arc Welding (SMAW) concentrates on safe welding and thermal cutting practices associated with SMAW. Students will follow procedures to deposit sound welding techniques in the horizontal, vertical up and overhead positions using E6010 and E7018 electrodes. The student will also follow procedures to deposit sound welding techniques in the vertical pipe fillet (5F) position using E6010 and E7018 electrodes.

**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: MATH 090, RDG 090 and WELD 100

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 nondestructive 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 metallurgical aspects of the welding of common engineering metals such as plain carbon, alloy and stainless steels, aluminum and cast irons. The selection of filler metals, transfer and recovery of alloying elements and the design of preheating and post heating cycles are also emphasized. Incidences of defects such as cracking and porosity and factors affecting these will also be discussed.

**106 Basic Pipe Welding** **6 Credit Hours**  
**8 Billable Contact Hours**

Prerequisite: WELD 100 and WELD 102

F, W

Basic Pipe Welding includes horizontal (2G), vertical (3G), overhead (4G) plate welding positions as well as horizontal (2G), vertical fixed (5G), and 45° fixed all position (6G) pipe welding on standard pipe diameters and thicknesses. Emphasis is placed on preparation, fit-up, code making organizations, welding standards, destructive testing and non-destructive testing (NDT) for both plate and pipe.

**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** **2 Credit Hours**  
**3 Billable Contact Hours**

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.

**109 Basic Welding Fabrication** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: RDG 090 and MATH 090 or qualifying score on accepted placement test

F, W, S

Basic Welding Fabrication will introduce students to CNC Plasma Cutting, layout theory, tube bending and notching, and basic fabricating techniques. Students will construct projects using blueprints, material lists, cut lists and written procedures. Additional topics to include: AutoCAD, welding safety, welding techniques, machine and equipment use, general lab safety, project design and fabrication and project planning. Other equipment operations will include but are not limited to: HBS, VBS, Shear, Iron Worker, punching and notching, drill press, metal brake, PAC, CNC/PAC, GMAW, GTAW, OFC, and various hand and power tools. Students will be able to retain their projects fabricated in class upon completion of class.

**110 Welding Symbols and Blueprint Reading** **2 Credit Hours**  
**2 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement tests

F, W

WELD 110 is designed to introduce the basic concepts of blueprint reading and welding symbols. The course also covers the basic features of a blueprint such as lines, views, dimensioning, and welding and NDT symbols. The blueprint reading will be supplemented by construction exercises using foam and plastic components.

**114 GMAW and GTAW Applications** **6 Credit Hours**  
**8 Billable Contact Hours**

Prerequisite: WELD 100

F, W

GMAW and GTAW Applications is designed to develop the skill levels of welders and introduce FCAW-G. Transfer modes are explained and applied to class objectives. 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** **12 Credit Hours**  
**16.67 Billable Contact Hours**

Prerequisite: RDG 090 or qualifying score on accepted placement test

F, W, S

This course is designed to meet or exceed the skill and knowledge requirements for the welding and cutting processes established by the American Welding Society for the qualification of QC10 Level I Entry Level Welder certification. AWS reference document EG2.0-2017 mandates requirements of this course. Additional welding exercises are included to assure each participant the greatest possible opportunity to successfully complete all performance qualifications tests for the AWS Level I Certification. WELD 115 is an introduction to various welding processes and procedures with emphasis on developing safe work habits in a lab/shop environment. Topics may include: machine functions, filler metal chemistry, blueprint and welding symbol interpretation, basic fabrication techniques, and code and procedure requirements for a variety of industrial needs. Welding/cutting processes covered with laboratory applications include: OFC, PAC, CAC-A, CNC-PAC, SMAW, GTAW, FCAW and GMAW. Welder performance qualification tests must meet AWS QC10 standards in addition to passing written examinations to receive each process certification.

**215 Advanced Level Welding** **12 Credit Hours**  
**16.67 Billable Contact Hours**

Prerequisite: WELD 115

F, W, S

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** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: WELD 110 and WELD 102 or WELD 114

S

Basic Pipefitting 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** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: WELD 100 and WELD 110 and WELD 114

W

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** **4 Credit Hours**  
**6 Billable Contact Hours**

Prerequisite: WELD 102 and WELD 106

W

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** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: RDG 090 and ENGL 090 or qualifying scores on accepted placement tests and ADMN 102 or 131 or equivalent keyboarding skills

F, W

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, customizing, printing and merging a variety of documents.

**103 Advanced Word Processing** **3 Credit Hours**  
**3 Billable Contact Hours**

Prerequisite: WPR 102

W

Advanced Word Processing develops proficiency in the advanced word processing functions of a word processing software. Advanced features of the software will be exercised as student determines how to complete rough drafts accurately, efficiently, and professionally. Critical soft skills are introduced, examined, and developed through realistic case scenarios using portfolio projects.