COURSE DESCRIPTIONS

Course Numbering System

090-099 Developmental courses that carry institutional credit only and do not apply towards graduation.

100-149 Freshman Career

150-199 Freshman University Parallel

200-249 Sophomore Career

250-291 Sophomore University Parallel

295-299 Field Trips, Seminars, Workshops, Independent Study, Co-ops
### ACCOUNTING (ACCTG)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>Applied Office Accounting</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: BSMTH 101, MATH 092, MATH 119, or qualifying score on ACT or COMPASS tests</td>
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</table>

This introductory course is designed to provide an overview of accounting concepts and principles for non-accounting majors. Two mini-practice sets provide students with real-world experience using the accounting cycle.

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<tr>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>151</td>
<td>Accounting Principles</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Prerequisite: ACCTG 151</td>
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</table>

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

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<tr>
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<tbody>
<tr>
<td>201</td>
<td>Microcomputer Accounting I</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: ACCTG 151 and CIS 109</td>
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</table>

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

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<tbody>
<tr>
<td>205</td>
<td>Microcomputer Accounting II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: ACCTG 152 and ACCTG 201</td>
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</table>

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

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<tbody>
<tr>
<td>220</td>
<td>Payroll Accounting</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: ACCTG 151</td>
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</table>

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.

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<thead>
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<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>251</td>
<td>Intermediate Accounting I</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Prerequisite: ACCTG 152</td>
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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 applicable APB and FASB pronouncements and related topics.

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</thead>
<tbody>
<tr>
<td>252</td>
<td>Cost Accounting</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Prerequisite: ACCTG 152</td>
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</table>

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

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<tbody>
<tr>
<td>254</td>
<td>Intermediate Accounting II</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Prerequisite: ACCTG 251</td>
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</table>

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 applicable APB and FASB pronouncements and related topics.

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<tbody>
<tr>
<td>255</td>
<td>Introduction to Taxation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite: ACCTG 151</td>
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</table>

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

### ADMINISTRATIVE PROFESSIONAL (ADMN)

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<th>Course Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>101</td>
<td>Introduction to Today’s Office</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
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</tbody>
</table>

This introductory course provides an overview of the administrative professional program. Content includes communication techniques and use of resources. Proofreading, spelling, grammar and punctuation skills are emphasized.
102 Keyboarding 1 Credit Hour 1 Billable Contact Hour
Prerequisite: Minimum test competencies in Reading must be met before registering for this course.
Keyboarding is designed to teach touch operation of the computer keyboard. The purpose of the course is to enable students to input and access information accurately and efficiently. Note: Students who have received credits for ADMN 131, 135 or WPR 103 or 104 will not receive credit for this course. This class may not be taken concurrently with any of the above courses.

104 Legal Specialty 3 Credit Hours 3 Billable Contact Hours
Prerequisite: ADMN 119 or EOS 119
This course is a comprehensive study of legal procedures and terminology. Content includes basic areas of law. All material is transcribed from recorded media. Legal Specialty is offered through the Regional Computer Technology Center and the Business Learning Lab on a self-paced basis.

105 Medical Specialty 3 Credit Hours 3 Billable Contact Hours
Prerequisite: EOS 119 or ADMN 119 and HLTSC 110
This course is a comprehensive study of medical terminology and transcription of operative reports, discharge summaries, pathology reports, etc. All material is transcribed from recorded media using the computer. The course is offered through the Regional Computer Technology Center and the Business Learning Lab on a self-paced basis using self-instructional materials.

106 Numeric Keypad 1 Credit Hour 1 Billable Contact Hour
Prerequisite: Minimum test competencies in Reading must be met before registering for this course.
Numeric Keypad teaches the touch operation of the computer ten-key pad. This course is designed for the development of speed and accuracy in entering data. Numeric Keypad is offered through the Regional Computer Technology Center and the Business Learning Lab on an individualized, self-paced basis.

119 Machine Transcription 3 Credit Hours 3 Billable Contact Hours
Prerequisite: EOS 135 or ADMN 135
Machine Transcription provides practice in processing communication from verbal to printed form by transcribing from recorded media. Students develop proficiency in the technical skill of transcribing business documents while strengthening punctuation, spelling, grammar, vocabulary, listening, editing and proofreading skills.

131 Beginning Keyboarding 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course teaches the touch method of computer keyboard operation and provides practice techniques for building speed and accuracy. Content includes keying letters, memos and reports.

131B Keyboarding Skills Enhancement 1 Billable Contact Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests and EOS 102 or ADMN 102 or touch keyboarding skills of 30 nwpm
This course presents proven techniques for increasing keyboarding speed and accuracy. The student will complete lessons following a routine of focusing on one letter and completing 15-second, 30-second, and one- and two-minute timings which enforce that letter. This is a self-paced course in the Regional Computer Technology Center and the Business Learning Lab using a Web site specifically created for skill building.

135 Intermediate Keyboarding 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests and touch keyboarding skills of 40 NWPM
Intermediate Keyboarding is taught with word processing-like software. The course includes the development of speed and accuracy and the production of business letters, memos, tables, and manuscripts.

201 Integrated Office Software 4 Credit Hours 4 Billable Contact Hours
Prerequisite: CIS 109 and CIS 112 and WPR 102
Integrated Office Software provides instruction in the use of current office suite software packages. The course includes simulation exercises designed to develop proficiency in organizing, sorting, managing and presenting information with word processing, spreadsheet, database and presentation software programs. The course also includes complex, hands-on projects that represent day-to-day administrative management activities.

ANTHROPOLOGY (ANTHR)

152 Introduction to Cultural Anthropology 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course provides a foundation of knowledge and appreciation of the range and variety of human life styles on a global basis. It describes and seeks general understanding about human customs or cultural behavior. This course provides the conceptual tools to understand cultural diversity and to help individuals to gain enlarged and enhanced perspectives on their own lives as well as the lives of others.

155 Introduction to Archaeology 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course is designed to provide a thorough introduction to the history, methods and theories of archaeology. Emphasis will be on a North American perspective, although examples of archaeological research/reasoning from around the world will be discussed, as appropriate. Case studies will be employed to illustrate major trends or concepts. Lectures, demonstrations, slide shows and hands-on experiences and exercises will be used to facilitate the learning experience.
165 Eastern North American Archaeology 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course is designed to provide a thorough introduction to the archaeology of eastern North America from the initial Native American occupations to the early Euro American settlement of the area. Case studies will be employed to illustrate major trends or concepts. Lectures, demonstrations, slide shows and hands-on experiences and exercises will be used to facilitate the learning experience.

175 Archaeological Field Methods 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS test

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

151 Art Fundamentals 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

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

The student will be exposed to the fundamental principles governing art in its various forms. Slide lectures, class discussions, presentations by visiting artists, films and studio projects are designed to meet the needs of general students in understanding and appreciating the fine and applied arts.

158 Art for Elementary Teachers 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course is designed for the student who is pursuing a career in elementary education. It will focus on the various strategies that are required to produce a qualitative art program at the primary grade levels. Emphasis will be placed on teaching art production, writing instructional objectives for lesson planning and reviewing the fundamentals of art.

160 Two-Dimensional Design 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

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

This course introduces the art student to the many drawing and painting techniques used by professional illustrators. The student will simulate the demands and deadlines faced in the advertising world. The exploration of ideas and images, recognition, media selection, step-by-step work-ups and presentation of final work is of utmost importance and will be developed thoroughly by the student. This course is viewed as a continuation of ART 160.

170 Life Drawing 3 Credit Hours
Prerequisite: ART 151 or ART 180

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

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
Prerequisite: ART 180

In this course, mixed media, self-expression, craftsmanship, 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
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

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.
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Contact Hours</th>
<th>Prerequisite</th>
<th>Notes</th>
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<tbody>
<tr>
<td>191</td>
<td>Painting II</td>
<td>3</td>
<td>6</td>
<td>ART 190</td>
<td>F, W</td>
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<tr>
<td>250</td>
<td>Watercolor Painting I</td>
<td>3</td>
<td>6</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W</td>
</tr>
<tr>
<td>252</td>
<td>Studio Art</td>
<td>3</td>
<td>6</td>
<td>ART 181 or ART 191 or ART 251</td>
<td>F, W</td>
</tr>
<tr>
<td>270</td>
<td>Ceramics I</td>
<td>3</td>
<td>6</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W</td>
</tr>
<tr>
<td>271</td>
<td>Ceramics II</td>
<td>3</td>
<td>6</td>
<td>ART 270</td>
<td>F, W</td>
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<tr>
<td>273</td>
<td>Ceramics IV</td>
<td>3</td>
<td>6</td>
<td>ART 272</td>
<td>F, W</td>
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<tr>
<td>274</td>
<td>Studio Practices Ceramics</td>
<td>3</td>
<td>6</td>
<td>ART 273</td>
<td>F, W</td>
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<tr>
<td>280</td>
<td>Art History: Prehistoric</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
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<tr>
<td>281</td>
<td>Art History: Renaissance to Baroque</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W</td>
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<tr>
<td>282</td>
<td>Art History: Neo- Classical/Early Modern</td>
<td>3</td>
<td>3</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W</td>
</tr>
<tr>
<td>151</td>
<td>Introduction to Astronomy</td>
<td>4</td>
<td>4</td>
<td>RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W</td>
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</tbody>
</table>

**Art History**

1. **Prehistoric**
   - Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
   - This course examines the art of the ancient western world beginning with prehistoric man and concluding with the Medieval Gothic Era. The periods covered include prehistoric, Mesopotamian, Egyptian, Greek, Roman, early Christian, Byzantine and Gothic.

2. **Renaissance to Baroque**
   - Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
   - This course is an exploration of the artists and ideals which 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.

3. **Neo-Classical/Early Modern**
   - Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
   - 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.

**ASTRONOMY (ASTRN)**

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

<table>
<thead>
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<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
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<tbody>
<tr>
<td>101</td>
<td>Internal Combustion Engines</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests</td>
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<tr>
<td>102</td>
<td>Automotive Electricity</td>
<td>4</td>
<td>6</td>
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<tr>
<td></td>
<td>Prerequisite: ELEC 125</td>
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<tr>
<td>103</td>
<td>Fuel &amp; Emission Control Systems</td>
<td>4</td>
<td>6</td>
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<tr>
<td></td>
<td>Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests</td>
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<tr>
<td>104</td>
<td>Automotive Ignition Systems</td>
<td>3</td>
<td>4</td>
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<tr>
<td></td>
<td>Prerequisite: ELEC 125</td>
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<tr>
<td>105</td>
<td>Automotive Transmissions</td>
<td>3</td>
<td>4</td>
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<tr>
<td></td>
<td>Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests</td>
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<tr>
<td>107</td>
<td>Automotive Chassis Units</td>
<td>4</td>
<td>6</td>
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<tr>
<td></td>
<td>Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests</td>
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<tr>
<td>108</td>
<td>Welding for Automotive Technicians</td>
<td>3</td>
<td>4</td>
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<tr>
<td></td>
<td>Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS test</td>
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<tr>
<td>114</td>
<td>Auto Instrumentation and Testing</td>
<td>4</td>
<td>6</td>
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<tr>
<td></td>
<td>Prerequisite: AUTO 101 and AUTO 103 and AUTO 104</td>
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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.

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.

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.

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.

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.

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.

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).

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.

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

### BIOLOGY (BIOL)

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>151</td>
<td>Biological Sciences I</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: RDG 090 and ENGL 090 and MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests</td>
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</table>

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 molecular biology, cell structure and function, metabolism, Mendelian and population genetics, evolutionary theory and ecology. This is the first semester of a two-semester sequence. Course requires laboratory work. Dissection of preserved animal specimens may be required. This course is not open to students who have previously taken BIOL 152.
153 Biological Sciences II 4 Credit Hours
Prerequisite: BIOL 151 or BIOL 152

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.

154 Introduction to Environmental Science 4 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests

A non-mathematical introduction to ecology and environmental science stressing fundamental concepts and principles of ecology/ecosystems, population dynamics, resources and pollution. Topics include land use, food resources, mineral resources, energy, air, water and the causative interrelationships between human values and socio-economic, political and environmental problems. This course is open to both science- and non-science majors.

157 Anatomy & Physiology I 4 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and BIOL 151 or CHEM 150 or CHEM 151 or high school biology and chemistry within the last five years

5 Billable Contact Hours

Fundamental concepts of cellular structure and human body organization. Emphasis on cellular structure and function and anatomy and physiology of the following human organ systems: integumentary, skeletal, muscular, nervous and special senses. Integrated principles of chemistry, biology and embryology are covered. This course is required for all students in the Health Sciences curriculum. Course requires laboratory work. Dissection of preserved animal specimens is required.

158 Anatomy & Physiology II 4 Credit Hours
Prerequisite: BIOL 157

5 Billable Contact Hours

A continuation of Biology 157, this course covers the anatomy and physiology of the human endocrine, circulatory, respiratory, digestive, renal and reproductive systems. This course is required for all students in the Health Sciences curriculum. Course requires laboratory work. Dissection of preserved animal specimens is required.

160 Biology of Aging 3 Credit Hours

3 Billable Contact Hours

This course presents the essential biological changes which occur as part of the aging process. In particular, those pathological conditions which are common in later life. It includes current theories of biological aging with special attention to the implications of those changes in serving the needs of older adults. It is designed to meet the needs of students preparing for careers in working with older adults.

251 Elements of Botany 4 Credit Hours
Prerequisite: BIOL 151 or BIOL 152

6 Billable Contact Hours

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
Prerequisite: BIOL 151 or BIOL 152

6 Billable Contact Hours

W

A detailed study of invertebrate and vertebrate animals. Emphasis is placed on morphology and physiology, taxonomy, evolution, economics and ecology. Some of the more important cases under these topics will be discussed and explored. This course requires field work outside of the normal laboratory hours throughout the semester. Dissection of preserved animal specimens is required.

259 Introduction to Pathophysiology 4 Credit Hours
Prerequisite: BIOL 158 and BIOL 260

4 Billable Contact Hours

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
Prerequisite: BIOL 151 or CHEM 150 or NURS 105

6 Billable Contact Hours

An introductory course designed to present the basic concepts, techniques and applications of microbiology. It will include detailed discussion of the characteristics of bacteria, fungi, algae, protozoa, helminthes and viruses in terms of morphology, chemical and biological properties, control techniques, disease and applications. Course requires laboratory work.

264 Fundamentals of Genetics 4 Credit Hours
Prerequisite: BIOL 151 or BIOL 152

6 Billable Contact Hours

This course provides an introduction to the principles of the transmission of inherited characteristics and the underlying molecular mechanisms of the regulation of expression of genetic information. Topics will include: classical genetics, molecular genetics, biotechnology and genetic engineering, genetics of cancer and population genetics.

BUSINESS ADMINISTRATION (BUSAD)

151 Introduction to Business 4 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

4 Billable Contact Hours

F, W

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

BUSINESS LAW (BSLW)  
251 Business Law  4 Credit Hours  4 Billable Contact Hours  
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS 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: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS 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: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests  
F, W, Sp  
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.

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

251 Human Resource Management  4 Credit Hours  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 personnel functions of recruitment, selection, placement, orientation and training. Attention is given to job analysis and evaluation, morale measurement and maintenance, union-management relationships and employees’ economic and physical security.

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

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

150 Fundamental Principles of Chemistry 4 Credit Hours
6 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 124 or MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests

An introduction to the fundamental concepts and applications of general chemistry and description of chemical compounds. Detailed discussions include: measurement, atomic structure, nuclear change, the periodic law, bonding, nomenclature, chemical reactions, mass relationships, solutions, acids and bases and other selected topics. The course is designed for majors in health, elementary education and technical programs and as an elective for non-science majors. Course requires laboratory work.

151 General College Chemistry I 4 Credit Hours
6 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS test and CHEM 150 or one year of high school chemistry

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

A continuation of Chemistry 151 which includes obtaining and applying quantitative information in the laboratory to the basic interrelationships among solution chemistry, chemical thermodynamics, chemical kinetics, chemical equilibria and electrochemistry. Course requires laboratory work.

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

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

The preparation, properties, structures and reactions of aliphatics, alcohols, ethers, aldehydes, ketones and carboxylic acids. Laboratory develops basic organic chemistry techniques as well as instrumental methods, including chromatography and spectroscopy. The course includes three hours of lecture and three hours of laboratory each week.

252 Organic Chemistry II 4 Credit Hours
6 Billable Contact Hours
Prerequisite: CHEM 251

A continuation of Chemistry 251 with consideration of enols, polyenes, amines, heterocyclics, carbohydrates, amino acids and macromolecular species. Laboratory develops basic organic chemistry techniques as well as instrumental methods, including chromatography and spectroscopy. The course includes three hours of lecture and three hours of laboratory each week.

COLLEGE SUCCESS SKILLS (COLL)

145 College Skills 2 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 or accumulating scores on ACT or COMPASS tests

This course is recommended for beginning college students seeking study skills for academic success. The instruction provides skills for students to use for achieving classroom excellence and independent learning, including textbook mastery and lecture synthesis. Special emphasis includes study applications in critical thinking. The Humanities Division offers this course in order to assist students in achieving academic goals efficiently. Although skills for effective communication during class meetings are included, the general education skill emphasized in this course is critical thinking.

COMMUNICATIONS (COMM)

151 Introduction to Mass Media 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

Formerly called Intro to Radio & TV, this course is designed to introduce students to the mass media in all their forms, from print to broadcast and the Internet. It covers media effects, the roles and influence of mass media in society, and the various forms of media messages, from news to entertainment, public relations and advertising. It introduces students to key issues in media law, governance and ethics, and gives them a chance for hands-on contact with a newspaper newsroom and radio and TV studios.

250 Radio Programming 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course is designed to provide students with a broad understanding of radio production theory and practice. It combines lectures on radio production techniques, radio marketing, and technology and equipment with studio practice. Students will produce simulated programs. Students also learn FCC rules regarding program content and community service.

251 Television Programming 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course is designed to provide students with a broad understanding of television production theory and practice. It combines lectures on television technology and production techniques with studio production. Students will produce simulated programs in the studio laboratory.
### 260 Advanced Radio I
#### Prerequisite: COMM 250
- F, W, Sp, Su

This course is the first in a series of two radio workshops that give students on-air experience. Level I students will learn the basics necessary to produce a weekly two-hour radio show. Emphasis will be on following the scheduled programming and learning how to adjust the scheduled music to hit specific breaks on time. The class will participate in the planning of a remote broadcast. This remote broadcast may be scheduled on a weekend. Students enrolled in this course will be required to record a brief newscast to be recorded for playback during their radio show. Students will develop announcing skills appropriate to specific program content and format. A two-hour weekly lab section must be arranged at the first class meeting.

### 261 Advanced Radio II
#### Prerequisite: COMM 260
- F, W, Sp, Su

A continuation of COMM 260, this course gives students additional time to develop their on-air delivery while expanding on topics learned, such as remote broadcasting, promotion and marketing. A detailed emphasis on the planning and implementing of special programming for WYDM will be a major portion of the one-hour weekly meeting. Students will continue to develop announcing abilities. A two-hour weekly lab section must be arranged at the first class meeting. Students who successfully complete COMM 261 are ready for independent on-air time.

### 265 Radio Lab I
#### Prerequisite: COMM 261
- F, W, Sp, Su

This is an independent lab that allows students to further develop both practical skills and their understanding of how television programs are produced. The class works as a team to produce thirty-minute community affairs programs that will air on Monroe Public Access Cable Television (MPACT). Five shows will be produced during each semester. Time required may occasionally exceed the contact hours of the course. A two-hour weekly lab section must be arranged at the first class meeting. Time required may exceed the contact hours of the course.

### 266 Radio Lab II
#### Prerequisite: COMM 261
- F, W, Sp, Su

This is an independent lab that allows students to further develop both practical skills and their understanding of how television programs are produced. Students enrolled in this lab will be assigned as assistants to programming, production, news or community service work. This may include peer mentoring for COMM 260 and COMM 261 classes. This lab allows students the opportunity to apply knowledge gained in prior coursework. Students will also serve as on-air talent as needed. Individual emphasis will be on producing up-to-date audio demo tapes of projects and air-checks of programs on WYDM.

### 267 Radio Lab III
#### Prerequisite: COMM 261
- F, W, Sp, Su

This is an independent lab that allows students to further develop both practical skills and their understanding of how programming, production, news and community service are all needed to operate a radio station successfully. Students enrolled in this lab will be assigned as assistants to programming, production, news or community service work. This may include peer mentoring for COMM 260 and COMM 261 classes. This lab allows students the opportunity to apply knowledge gained in prior coursework. Students will also serve as on-air talent as needed. Individual emphasis will be on producing up-to-date audio demo tapes of projects and air-checks of programs on WYDM.

### 270 Advanced Television I
#### Prerequisite: COMM 251
- F, W, Sp, Su

This course is the first in a series of two television workshops that give students on-air experience. The class works as a team to produce thirty-minute community affairs programs that will air on Monroe Public Access Cable Television (MPACT). Emphasis is on developing news, sports, community events and interview segments. Work includes planning, interviewing and production of live-to-tape shows. A weekly lab section must be arranged at the first class meeting.

### 271 Advanced Television II
#### Prerequisite: COMM 270
- F, W, Sp, Su

A continuation of COMM 270, students in this course further develop their production skills. The class works as a team to produce weekly 30-minute news programs that will air on Monroe Public Access Cable Television (MPACT). Emphasis is on developing news, sports, community events and interview segments. Work includes planning, interviewing and production of live-to-tape shows. A weekly lab section must be arranged at the first class meeting.

### 275 Television Lab I
#### Prerequisite: COMM 271
- F, W, Sp, Su

This is an independent lab that allows students to further develop both practical skills and their understanding of how television programs are produced. Students enrolled in this lab will be assigned as assistants to programming and production work. This may include peer mentoring for COMM 270 and COMM 271 classes. This lab allows students the opportunity to apply knowledge gained in prior coursework. Specific tasks may include production of B-roll footage, producing and/or updating the PSA database and other recordings used by MPACT members. Students will also assist in the production of special programs scheduled during the semester for which they are enrolled.
This course will focus on the Windows operating environment. Topics include working with files and folders, customizing the Windows environment, managing programs, using Windows accessories and utility programs, transferring data between applications, managing printing options and performing disk maintenance.

**COMPUTER INFORMATION SYSTEMS (CIS)**

**276 Television Lab II**
1 Credit Hour
2 Billable Contact Hours
Prerequisite: COMM 271
F, W, Sp, Su

This is an independent lab that allows students to further develop both practical skills and their understanding of how television programs are produced. Students enrolled in this lab will be assigned as assistants to programming and production work. This may include peer mentoring for COMM 270 and COMM 271 classes. This lab allows students the opportunity to apply knowledge gained in prior coursework. Specific tasks may include production of B-roll footage, producing and/or updating the PSA database and other recordings used by MPACT members. Students will also assist in the production of special programs scheduled during the semester in which they are enrolled.

**277 Television Lab III**
1 Credit Hour
2 Billable Contact Hours
Prerequisite: COMM 271
F, W, Sp, Su

This is an independent lab that allows students to further develop both practical skills and their understanding of how television programs are produced. Students enrolled in this lab will be assigned as assistants to programming and production work. This may include peer mentoring for COMM 270 and COMM 271 classes. This lab allows students the opportunity to apply knowledge gained in prior coursework. Specific tasks may include production of B-roll footage, producing and/or updating the PSA database and other recordings used by MPACT members. Students will also assist in the production of special programs scheduled during the semester for which they are enrolled.

**109 Spreadsheet Software**
3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W

This course 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 scores on ACT or COMPASS 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.

**118 Windows Operating System**
1 Credit Hour
1 Billable Contact Hour
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
F, W

This course will focus on the Windows operating environment. Topics include working with files and folders, customizing the Windows environment, managing programs, using Windows accessories and utility programs, transferring data between applications, managing printing options and performing disk maintenance.

**123 PowerPoint Presentation Software**
3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, 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 scores on ACT or COMPASS tests
F, W, Sp

This course provides students with basic knowledge of computer information systems and 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.

**132 Computer Programming Concepts**
3 Credit Hours
3 Billable Contact Hours
Prerequisite: BSMTH 101 or MATH 092 or qualifying score on ACT or COMPASS tests
F, W

This course provides an introduction to computer programming design and the coding of computer programs. Students will design solutions to computer problems using pseudocode, flowchart symbols and hierarchy charts. These solutions will then be coded, executed and debugged.

**140 Help Desk Concepts**
3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
F, W

This course 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.

**142 Help Desk Troubleshooting**
3 Credit Hours
3 Billable Contact Hours
Prerequisite: CIS 130

This course covers application and operating system troubleshooting and problem-solving techniques. Real-world case studies will be fielded by students to provide them with challenges they can expect to encounter in a day-to-day help desk support situation. In addition, this course will help to prepare students to successfully pass the Help Desk Analyst Certification Exam.

**150 Computer Science I**
3 Credit Hours
3 Billable Contact Hours
Prerequisite: CIS 132
F, W

This course focuses on the design stage of computer program development and coding of programs using the C++ programming language. Students will diagram solutions to a variety of computer problems using ANSI standard flowcharting symbols, structure charts and other design methods. Utilizing microcomputers, these solutions will then be coded, executed and debugged.
152 Visual Basic Programming  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 132
F, W
This course uses VISUAL BASIC to develop Windows applications. Utilizing microcomputers, students will design, build, run, save, modify and debug VISUAL BASIC applications using VISUAL BASIC interfaces, tools, forms, controls, properties and code.

155 Database Management Systems  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 112
F
This course covers the process of database design, development, implementation and management. Topics covered include relational database model, object-oriented database model, structured query language, entity relationships, normalization, database life cycle and distributed database management systems.

167 Discrete Structures  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 250 and MATH 159 or MATH 164
This course covers mathematical principles and techniques required for analysis, proofs and general understanding of algorithms used in computer science. Topics include: algorithms, combinatorics, sets, functions, mathematical induction and understanding and doing proofs. Also covered are "big oh," omega and theta notations for the growth of functions, graphs, trees and Boolean Algebra.

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.

171 Using the Internet  1 Credit Hour  1 Billable Contact Hour
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course will teach students how to use the Internet as a resource and research tool. Students will learn various ways of accessing the Internet and communicating with other users via the Internet. In addition, students will learn advanced search tools and other resources to retrieve information. Course coverage will include browsers, search engines, FTP, e-mail and Internet security. Operating system file management skills and basic knowledge of the Internet are required for this course. Students who do not have these skills and knowledge should enroll in CIS 130 prior to this course.

172 Web Design Concepts  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 130
This course covers the fundamentals of designing informative, attractive and efficient Web pages. It includes issues of design techniques, browsers and computing platforms, typography, color selection, navigation and storyboarding.

174 Dreamweaver Web Design  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 130 and two of the following: CIS 172, CIS 176, CIS 177, CIS 182, CIS 184, CIS 185, CIS 186, CIS 187, or CIS 189
W
This course covers the use of one of today's most powerful Web design tools, Dreamweaver. Students will cover the Dreamweaver topics and skills necessary to build and manage attractive, dynamic professional Web sites.

175 Java Programming  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 150
Java is an object-oriented programming language that can be used to create stand-alone applications and applets. Java applications are platform-independent programs that will run on any computer that supports Java. Java applets are used to enhance World Wide Web pages. By using applets, Web pages can include audio, animation, interactivity, video and even three-dimensional imaging. This course includes coverage of the Java language and Object-Oriented Programming.

176 Web Animation (Flash)  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 130 and one of the following: CIS 172, 182, 184, 185, 186, 187, or 189
F
This course covers the skills and techniques for producing and delivering high-impact Web sites using Flash. Students will be incorporating musical tracks, sound effects and advanced animations to create effects that are viewable across numerous Web platforms with efficient download speeds.

177 Markup Languages  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 130
This course covers XHTML and introduces XML. Students will be using a case-oriented, problem-solving approach to create Web pages using these Web development markup languages.

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.

180 Graphic Design Concepts  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 130
F
This course covers print design, layout, typography and related publishing concepts. It contains essentials of print design layout, typographic composition, font selection, scanning techniques and the printing of professional-looking publications.

182 Illustrator Graphics  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 130
This course covers the tools and techniques of vector-based drawing software using Adobe Illustrator.
Students may be required to design a full or partial system implementation of a new or updated computer system. Analysis, recommendations, design, development and case studies involving data collection, current system analysis where computer hardware and/or software is to be replaced, installation, maintenance and troubleshooting of new hardware and/or software is emphasized. This course uses Fireworks. Knowledge of Adobe Photoshop and/or Adobe Illustrator is recommended for this course.

This course covers the tools and techniques of the production tool Adobe After Effects. This development platform will stress the incorporation of sound, graphics, animation and video that can be deployed on the Web, on DVD and with other multimedia applications.

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

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

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

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

This course emphasizes the study of operating systems for personal computers. Topics include: 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 reinforce the concepts covered in each chapter.

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 reinforce the concepts covered in each chapter.

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 reinforce the concepts covered in each chapter.
228 Linux Administration  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 208
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
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
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  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 150
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. Data structures studied include: stacks, queues and linked-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
This course will cover the fundamental principles and practices of designing and programming computer games. Students will design and implement several 2D and 3D games utilizing a variety of programming techniques and tools, including: C++ programming language, operating systems, graphics API, computer graphics, audio editing software, 3D modeling software and 3D collision detection.

268 Assembly Language/Computer Architecture  4 Credit Hours  4 Billable Contact Hours
Prerequisite: CIS 150
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.

272 Database Web Development  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 174 or CIS 177
This course covers the creation of Web sites that can display, insert, update and delete data from a database. It includes working with relational databases and other software and programming tools such as: SQL, MySQL, PHP, HTML, client-side and server-side scripts and advanced Dreamweaver MX 2004 development features to create dynamic e-commerce Web sites. (It is recommended that CIS 179 be completed prior to taking this course.)

274 Advanced Database Web Development (with ASP.NET)  3 Credit Hours  3 Billable Contact Hours
Prerequisite: Two computer programming courses from CIS 132, CIS 150, CIS 152, CIS 175 or CIS 179 or any 200-level programming course
This course covers advanced topics in the design and maintenance of interactive and dynamic Web applications using the server-based scripting environment. It will cover Web programming concepts and advanced topics, such as ASP.NET (Active Server Pages). CIS 112, CIS 177 and CIS 272 are recommended prior to enrolling in this course. Note: CIS 177 does not meet the programming language requirement for this course.

284 Advanced Photoshop Graphics  3 Credit Hours  3 Billable Contact Hours
Prerequisite: CIS 180 and CIS 184
This course covers advanced tools, features and techniques of the image editing software Photoshop.

CONSTRUCTION MANAGEMENT TECHNOLOGY (CONM)

100 Introduction to Design and Construction  3 Credit Hours  4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

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 scores on ACT or COMPASS tests
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.

102 Construction Practices  3 Credit Hours  4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
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 Residence Drafting 4 Credit Hours
Prerequisite: RDG 090 and CONM 110 or MDTC 101 or MDTC 151 or MDTC 160 or concurrent registration in CONM 110
Complete working drawings are developed for one building of frame construction, with emphasis on the interrelationships of the various views, including site and floor plans, exterior and interior elevations, sections and details. Accuracy of linework, lettering and scale are stressed.

105 Mechanical Building Systems 4 Credit Hours & Equipment 6 Billable Contact Hours
Prerequisite: CONM 110 or MDTC 101 or MDTC 151 or MDTC 160
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
Prerequisite: RDG 090 and high school or college trigonometry
Theory and field practice in using tapes, levels and transits in land survey, building layout and contours and drainage are covered. This course includes a study of building site conditions and practice in taking field notes and in translating them into drawings.

110 Construction Blueprint Reading 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
Covered in this course are fundamentals of construction blueprint reading: interpretation of basic symbols, terminology organization of construction drawing, sketching and material quantity takeoff.

120 Introduction to AutoCAD for Architecture 3 Credit Hours
Prerequisite: CONM 103 or CONM 110
This course is an introduction to computer aided design as it applies to the architecture and construction industry. The content examines typical hardware requirements and basic software (AutoCAD) commands used to create, edit and plot 2D architectural drawing files.

201 Site Planning and Development 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
This course studies the processes required to develop a functional site plan, including basic designs of pavements, parking lots layout, storm drainage, public utilities, landscaping consideration and zoning requirements.

202 Construction Safety 3 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
This course is designed to provide students with an opportunity for an in-depth study of construction safety and the importance of employee safety and health in the construction industry. The code of federal regulations (29 CFR 1926) and MIOSHA construction standards are examined. Emphasis will be placed on the interpretation and application of government regulations. Students who successfully complete the course will receive an OSHA 30 hour completion card.

240 Construction Planning & Scheduling with Primavera 3 Credit Hours
Prerequisite: CONM 101 and CONM 110
This is a comprehensive course which introduces proper project planning, scope and schedule development. Topics include: activity durations and the methods of determining them, PERT, precedence, linear scheduling, resource allocation development of a work breakdown structure, resource loading, cost loading and resource leveling. The students will identify required activities, resources and costs required to monitor a project throughout the construction process. Students will be required to complete both manual and computerized scheduling assignments. Students will use Primavera scheduling software to complete assigned projects.

242 Construction Documents and Law 3 Credit Hours
Prerequisite: CONM 240
This course will examine the relationship between the construction contract documents and the construction process. The focus will be on the rights, duties and responsibilities of the owners, contractors and suppliers. Topics covered include: standard document forms, specifications, bonding, insurance, claims, disputes and payments. Legal issues and disputes resulting from changing conditions, delays, changes to work and differing site conditions are also explored.

244 Construction Estimating 3 Credit Hours
Prerequisite: CONM 101 and CONM 110
This course covers the processes used to tabulate accurate construction cost estimates. Quantity survey techniques are used to determine equipment, labor and material costs. A detailed cost estimate and bid package will be developed using computer database and estimating software. Conceptual cost estimating is introduced.

248 Case Studies in Construction Management 1 Credit Hour
Prerequisite: CONM 242
This course is designed to explore actual construction project case studies related to planning, scheduling, estimating and contract administration.
COOPERATIVE EDUCATION (CO-OP)

Cooperative Work Experience 1 to 4 Credit Hours

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

CULINARY SKILLS AND MANAGEMENT (CSM)

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

Food Preparation I

101A Introduction to Culinary Arts 4 Credit Hours
Prerequisite: CSM 111

Students learn the fundamentals of food preparation in the food service business, including safety skills, modern kitchen tools and equipment, properties and composition of food and basic knowledge of meats, poultry and seafood. The study of basic cooking principles, weights and measures, and vegetables and starch preparation, along with basic recipe understanding, are all stressed in this course to help prepare students for culinary careers. Students are required to register for all modules of CSM 101 concurrently.

101B Basic Restaurant Production 2 Credit Hours

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

101C Baking I 2 Credit Hours

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

101D Soups, Stocks, & Sauce Production 2 Credit Hours

In modern food service, a thorough understanding of soups, stocks and sauce production is vital for the successful cook. Through daily production, students demonstrate the proper preparation of stocks, reductions and glazes, as well as flavoring based 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.

111 Food Sanitation 2 Credit Hours

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

114 Nutrition 2 Credit Hours
Prerequisite: CSM 116A and CSM 116B and CSM 116C and CSM 116D

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

Food Preparation II

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

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

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

This course is designed to introduce the student to the wide range of pastries used in commercial food service establishments. The preparation and uses of puff dough, Danish dough, French pastries and international pastries are studied and demonstrated by the student. Students also learn about and produce gateaus, wedding cakes, chocolate work, cookies and candies. Specialty pastry areas such as pulled and spun sugar are introduced. Students are required to register for all modules of CSM 116 concurrently.
Advanced Food Preparation I

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

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

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

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

119 Bar Management 1 Credit Hour
1 Billable Contact Hour
Prerequisite: CSM 201A and CSM 201B and CSM 201C and CSM 201D and CSM 201E

This course familiarizes the student with laws related to serving alcohol along with the server's responsibilities, basic mechanics and principles of bartending. Students also study the processes that produce different alcoholic beverages, such as beer, wines, spirits and liqueurs.

Advanced Food Preparation II

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

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

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

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

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

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

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

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

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

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

207 Restaurant Management & Supervision 3 Credit Hours
3 Billable Contact Hours
Prerequisite: CSM 201A and CSM 201B and CSM 201C and CSM 201D and CSM 201E

This course provides instruction in the management techniques involved in modern food service operations. Particular topics include the study of restaurant and menu planning. Through the assembly of a semester-long project, students learn the tasks and responsibilities of operating a restaurant from "conception to opening day." This includes areas such as market surveys, scheduling needs and management and supervisory concepts.

Advanced Food Preparation II

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

This course is designed to teach the student the art of garde manger and food presentation. The focus is on specialty work, including ice and butter sculptures, vegetable carving, salt dough, charcuterie and tallow sculpturing. Through a series of elaborate theme buffets, students also are introduced to platter presentation and salon competitions. Students are required to register for all modules of CSM 216 concurrently.
216B Menu Planning II 1 Credit Hour
Prerequisite: CSM 210A and CSM 210B and CSM 210C and CSM 210D and CSM 210E

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

216D Advanced Buffet Preparation 3 Credit Hours
Prerequisite: CSM 210A and CSM 210B and CSM 210C and CSM 210D and CSM 210E

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).

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

The purpose of this course is to introduce the student to the study of dance composition. The semester will be spent in relation to the concepts of this course as presented in class. Written and skills tests are a 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).
## Early Childhood Development (ECDV)

### 105 Child Growth and Development 3 Credit Hours
**Prerequisite:** ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests

This course is intended to present to the student a comprehensive analysis of children from conception to eight years old. The student will gain an understanding of child development in all of the following areas: physical growth, cognitive development, psychological development, nutritional needs and socialization processes. The purpose of this course is to focus on enhancing child care skills as a practical application of the theoretical structure of the course.

### 106 Observing and Recording 3 Credit Hours
**Prerequisite:** ECDV 105

Students develop appropriate skills and experience for conducting objective child observations. Observation in a child care center and a case study are required. The physical, emotional, social, cognitive, language and creative needs of pre-schoolers will be analyzed in relation to sound child guidance techniques. Thirty clock hours of observation experiences will be required.

### 107 Programs for Young Children Birth to Age 5 5 Credit Hours
**Prerequisite:** ECDV 105

The development of curricula and activities for use with children from birth to age five will be emphasized in this course. Students will design a safe environment and plan developmentally appropriate activities. This course will include 60 contact hours of field experience.

### 110 Infant and Toddler Development and Care 3 Credit Hours
**Prerequisite:** ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests

This course focuses on the development and care of children birth to three years old. The course will cover all aspects of infant and toddler curriculum including: developmental milestones, how young children learn, the principles of active learning, effective adult/child interaction strategies, supportive caregiving policies, enriching learning environments, schedules and routines, appropriate assessment and observation, relationships with parents/families and developmentally appropriate cognitive, physical, social and emotional growth activities. This course requires 15 observation hours at a site approved by the instructor.

### 210 Administration of Child Care Programs 3 Credit Hours
**Prerequisite:** ECDV 105 and ENGL 101 or ENGL 151

This course will enhance the student’s understanding of the total range of administrative responsibilities in early childhood programs. It is designed to offer an overview of interpersonal communication, financial responsibilities, licensing, personnel certification, staffing and evaluation of overall programs. Students will be responsible for developing budgets, job descriptions, health and safety programs and a variety of other materials used in administration.

### 218 Early Childhood Development Externship 5 Credit Hours
**Prerequisite:** ECDV 106 and ECDV 107 and ECDV 207

The Early Childhood Development Externship is intended for students to gain practical experience while working under supervision in a child care facility. In addition to weekly class meetings, a minimum of 150 hours of supervised experience in a licensed child care facility are required during the semester. The student will apply theories learned in the prerequisite classes to their field work.
EARTH SCIENCE (ESC)

151 Earth Science 4 Credit Hours
5 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests
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 score on ACT or COMPASS test
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 score on ACT or COMPASS test
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 scores on ACT or COMPASS tests
This course is designed primarily for students who are considering entering the teaching profession. The course involves a minimum of 60 hours of field work where the student will have the opportunity to observe and participate in a public school as an aide to the professional staff. All students meet together on campus for 1.5 hours each week to hear guest speakers, discuss classroom experiences and review relevant readings. Placement schedules are worked out in cooperation with the participating teacher. Time in the host school averages about six hours per week. This course fulfills similar pre-teaching experiences required by several universities. Check with the college counselor regarding transfer to the university you plan to attend.

ELECTRONICS AND COMPUTER TECHNOLOGY (ELEC)

125 Fundamentals of Electricity 3 Credit Hours
4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests and one year high school algebra
F, W, Sp
This course is designed as a survey for electronics majors and non-majors. It covers safety, basic electrical theory (AC and DC), Ohm’s Law, reading schematic drawings, electrical component identification and functions, sources of electrical power, motors, power distribution and basic solid-state devices. Laboratory exercises will include measurement of resistance, voltage and current with analog and digital meters; basic oscilloscope use; relays and transformers; circuit design and construction; and component testing.

127 AC/DC Motors 3 Credit Hours
4 Billable Contact Hours
Prerequisite: ELEC 125
F
This course is designed to provide students with a knowledge of AC/DC motor operating characteristics and control circuits. It will provide hands-on experience with wiring control circuits, checking the operational characteristics of motors and the use/installation of circuit protection devices. Development and application of ladder logic theory, diagrams and circuits will be covered. This course acquaints the student with concepts and applications of three-phase power, including wye and delta configurations. Basic operation and circuit characteristics of three-phase alternators and transformers will be covered. The construction and operation of three-phase induction motors and their related starting, control and protection circuits along with variable-frequency drives will also be addressed.

130 Introduction to Programmable Logic Controls 3 Credit Hours
4 Billable Contact Hours
Prerequisite: ELEC 125
F, W
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.
Projects include, but are not limited to, an electronic "player-piano," programmable timing circuits and an autonomous robot.

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

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

134  Electronics II  4 Credit Hours  6 Billable Contact Hours
Prerequisite: ELEC 132

A continuation of Electronics I. Topics covered include: decibels, multistage and differential amplifiers, negative feedback, frequency limitations, op-amp applications, special-purpose ICs, oscillators, power amplifiers, regulated power supplies and an introduction to radio-frequency techniques. An important part of the course is the construction of a variable-regulated power supply which the student may keep upon payment of the approximately $50 parts cost.

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

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

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

Measuring and test equipment (M&T) is a vital part of almost all industry. This course examines the characteristics and limitations of common instruments. A major focus is on calibration techniques and standards for such equipment. Topics covered include safety, lab techniques, AC and DC meters, digital multimeters, bridges, signal-processing circuits, and typical instruments for measuring parameters such as torque, pressure, temperature, dimensional, mass, force and others.

137  Microprocessors  4 Credit Hours  6 Billable Contact Hours
Prerequisite: ELEC 135

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

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

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

141  Industrial Automation  3 Credit Hours  4 Billable Contact Hours
Prerequisite: ELEC 125

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

144  PC-Based Data Acquisition Control  3 Credit Hours  4 Billable Contact Hours
Prerequisite: ELEC 132

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

156  Introduction to Renewable Energy Systems  4 Billable Contact Hours
Prerequisite: RDG 090 and MATH 119 or qualifying score on COMPASS or ACT tests

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.
### ENGLISH (ENGL)

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

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### 157 Introduction to Solar Energy Systems

Prerequisite: RDG 090 or qualifying COMPASS or ACT scores and Co-requisite: MATH 119 or qualifying COMPASS score and ELEC 125 and ELEC 156

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

Prerequisite: RDG 090 or qualifying COMPASS or ACT scores and Co-requisite: MATH 119 or qualifying COMPASS score and ELEC 125 and ELEC 156

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

Prerequisite: ELEC 132

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

Prerequisite: ELEC 125

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

Prerequisite: ELEC 125

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

Prerequisite: ELEC 157 (Grade of C or better)

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.
### 155 Technical Writing 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 101 or ENGL 151 and basic word processing skills  
F, W, Sp, Su  
Students will learn to analyze and interpret technical information and to communicate effectively and efficiently in writing using the vocabulary of the business and technical worlds. Writing assignments and projects will include a variety of business and technical applications and report writing. Conducting research, analyzing various writing, writing correspondence and instructions, preparing an oral briefing and engaging in group projects will promote critical thinking and teamwork.

### 240 African American Literature 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 151  
F  
This is a survey course of major literary works by African American authors, mainly from the 19th and 20th centuries. This class is designed to develop critical reading proficiency and to better understand our multicultural society.

### 251 Introduction to Poetry and Drama 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 151  
F, W, Sp, Su  
The course examines selected poetry and drama, emphasizing the development of critical attitudes needed to understand and enjoy these literary forms. About half a semester is spent on each form.

### 252 Introduction to Short Story and Novel 3 Credit Hours 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 enjoyment of 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, W  
This is a survey course of major literary works, mainly of 19th- and 20th-century authors, designed to develop the ability to read critically with understanding and appreciation.

### 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 Writings 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 151  
F, W  
This course will introduce the student to women’s writings from diverse cultures. Beginning with the 18th century, this course will trace the development of women’s writings in a variety of genres—novels, short stories, poetry, diaries, journals and essays. The student will also be introduced to the social context of these writings as well as a number of critical approaches to their interpretations.

### 256 Children’s Literature 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 151  
F, W  
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 learn 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  
F, 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.

### 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. Each student’s work will receive attentive individual scrutiny by the instructor and will be discussed in class and in individual conferences. In addition, the course will include analytic reading of the work of other students and of professional writers.

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

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

### 267 British Literature: Anglo Saxon to 18th Century 3 Credit Hours 3 Billable Contact Hours

Prerequisite: ENGL 151  
F  
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 the Beowulf poet 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.

### 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 Samuel Beckett. Examples of different genres (poetry, prose, drama, etc.) will be read and discussed. Students will also explore the various literary movements that shaped these writers.
FINANCE (FIN)

151 Personal Finance with Application for Business Formation 3 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This course--formerly Wealth Building Principles--lays out practical methods to increase one's net worth over time by utilizing sound principles of money management and understanding how money behaves. Knowledge of accounting or business principles is not required. Topics include compounding and the “time value” of money, investments, wills and estates, cohabitation and divorce, taxes, mortgages, retirement plans and insurance.

FRENCH (FREN)

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

152 Elementary French II 4 Credit Hours
Prerequisite: FREN 151 or one year high school French
This course is a continuation of French 151. There will be an 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.

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

252 Second Year French II 4 Credit Hours
Prerequisite: FREN 251 or three years high school French
This course is a continuation of French 251. There will be an 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.

GEOGRAPHY (GEOG)

151 Elements of Physical Geography 4 Credit Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests
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
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on COMPASS or ACT tests
This course provides a world regional survey emphasizing regional distinctions including population characteristics, environmental features, basic resources, political structure and economic activity within the major geographical regions with a focus on cause and effect and man/land relationships.

GERMAN (GERMN)

151 Elementary German I 4 Credit Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
This beginning course in German provides an introduction to German language and culture. The student will learn basic structures and vocabulary of the target language as well as practice the four basic language skills: reading, writing, listening and speaking.

152 Elementary German II 4 Credit Hours
Prerequisite: GERMN 151 or one year high school German
The student will learn more advanced structures of the target language and additional vocabulary. The proficiency orientation of the class allows extensive practice in the four basic language skills: reading, writing, listening and speaking. This course is a continuation of GERMN 151.

251 Second Year German I 4 Credit Hours
Prerequisite: GERMN 152 or two years high school German
The student will learn additional structures and vocabulary of the target language and will continue practicing the four basic language skills: reading, writing, listening and speaking. Students will be introduced to authentic materials and literature. This course is a continuation of German 152.

252 Second Year German II 4 Credit Hours
Prerequisite: GERMN 251 or three years high school German
The student will continue exploring authentic materials and literature. Practice of the four basic language skills--reading, writing, listening and speaking will continue at an advanced level. This course is a continuation of German 251.
**HEALTH SCIENCES (HLTSC)**

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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
<th>Contact Hours</th>
<th>Prerequisite:</th>
<th>Dates</th>
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</thead>
<tbody>
<tr>
<td>110</td>
<td>Medical Terminology</td>
<td>2 Credit Hours</td>
<td>2 Billable Contact Hours</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W, Sp</td>
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<tr>
<td>120</td>
<td>Pharmacology</td>
<td>3 Credit Hours</td>
<td>3 Billable Contact Hours</td>
<td>BIOL 158 or admission to PN program</td>
<td>F, W, Sp</td>
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<tr>
<td>151</td>
<td>Principles of Nutrition &amp; Diet Therapy</td>
<td>3 Credit Hours</td>
<td>3 Billable Contact Hours</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W, Sp, Su</td>
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<tr>
<td>156</td>
<td>Phlebotomy Basics</td>
<td>6 Credit Hours</td>
<td>8 Billable Contact Hours</td>
<td>RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W, Sp</td>
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<tr>
<td>157</td>
<td>Phlebotomy II</td>
<td>3 Credit Hours</td>
<td>6.33 Billable Contact Hours</td>
<td>HLTSC 156 with a “C” or better</td>
<td>F, W, Sp</td>
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<tr>
<td>160</td>
<td>Perspectives of Aging</td>
<td>3 Credit Hours</td>
<td>3 Billable Contact Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests</td>
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**HEALTH-PHYSICAL EDUCATION (HPE)**

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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
<th>Contact Hours</th>
<th>Prerequisite:</th>
<th>Dates</th>
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<tbody>
<tr>
<td>150</td>
<td>Personal Health</td>
<td>2 Credit Hours</td>
<td>2 Billable Contact Hours</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests</td>
<td>F, W, Sp</td>
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<tr>
<td>151</td>
<td>First Aid and Safety</td>
<td>2 Credit Hours</td>
<td>2 Billable Contact Hours</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests</td>
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<tr>
<td>153</td>
<td>Mental Health</td>
<td>3 Credit Hours</td>
<td>3 Billable Contact Hours</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS test</td>
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<tr>
<td>159</td>
<td>The History &amp; Foundations of Physical Education</td>
<td>2 Credit Hours</td>
<td>2 Billable Contact Hours</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
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<tr>
<td>Course Code</td>
<td>Credit Hours</td>
<td>Prerequisites</td>
<td>Description</td>
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<tr>
<td>165 Karate</td>
<td>1 Credit Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
<td>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.</td>
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<td>167 Physical Fitness</td>
<td>1 Credit Hour</td>
<td>RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS test</td>
<td>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 fitness 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.</td>
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<td>170 Exercise Walking</td>
<td>1 Credit Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
<td>Course content for physical fitness activities will include: section of clothing, equipment, terminology, basic fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn 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.</td>
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<tr>
<td>171 Jogging</td>
<td>1 Credit Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
<td>Course content for physical fitness activities will include: section of clothing, equipment, terminology, basic fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn jogging skills and the knowledge and understanding of concepts related to those skills. Students will benefit from today’s emphasis on lifetime individual sport and recreational activities while receiving one hour elective credit for either their associate's degree or for personal enjoyment. This course is also transferable to many four-year institutions as a P.E. credit for those students seeking a baccalaureate degree.</td>
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<td>173 Aerobics</td>
<td>1 Credit Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
<td>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.</td>
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<td>174 Tae Kwon Do</td>
<td>1 Credit Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
<td>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.</td>
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<td>175 Kick Boxing</td>
<td>1 Credit Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
<td>The purpose of the course is to help the participating student understand the art of the Karate term of KickBoxing, not only as a means to attain physical fitness and cardiovascular exercise, but also as a method of self-defense. Emphasis will be placed on physical fitness, self-discipline and self-defense. Involved are body movement principles, a progressive cardiovascular exercise program and other desirable health and technical aspects of the art of KickBoxing.</td>
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<tr>
<td>177 Weight Training</td>
<td>1 Credit Hour</td>
<td>ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test</td>
<td>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. Students’ strength and endurance will be assessed through a weight training program designed to meet class and personal objectives.</td>
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</table>
178 Weight Lifting 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, W

The purpose of this course is to provide students with an opportunity to learn weight lifting skills and the knowledge and understanding of concepts related to those skills. Course content will include: components of physical fitness, selection of clothing, equipment, terminology, fundamental weight lifting skills and safety. Written and/or skills tests are a part of the course. Weight 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. Students’ size, power and strength will be assessed through a weight lifting program designed to meet class and personal objectives.

181 Volleyball 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, W

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

184 Basketball 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
F, W

Course content for physical fitness activities will include: section of clothing, equipment, terminology, basic fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn 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 scores on ACT or COMPASS test
W

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

193 Snow Skiing 1 Credit Hour 2 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS test
W

Course content for physical education activities will include: selection of clothing, equipment, terminology, fundamental skills and safety. Written and/or skills tests are a part of each course. The purpose of this course is to provide students an opportunity to learn snow skiing skills and the knowledge and understanding of concepts related to snow skiing. Students will benefit from 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.

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 elective credit for either their associate’s degree or for personal enjoyment. 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
167 Physical Fitness F, W
170 Exercise Walking F, Sp, Su
171 Jogging F, Sp, Su
173 Aerobics F, W, Sp, Su
174 Taek Woon Do Sp, Su
175 Kick Boxing F, W, Sp, S
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 scores on ACT or COMPASS tests

This course introduces the cultural and institutional development of Western civilization from its beginning to 1650. It emphasizes the contributions of past civilizations to the present. Students planning a major in history should elect both Western Civilization 151 and Western Civilization 152 in their freshman year.

152 Western Civilization:1650 to Present 3 Credit Hours 3 Billable Contact Hours

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

153 History of Michigan 3 Credit Hours 3 Billable Contact Hours

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

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 scores on ACT or COMPASS tests W, SU

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 scores on ACT or COMPASS tests F, Sp

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 movement of goods and people from a comparative perspective.

159 World History: 1500 to Present 3 Credit Hours 3 Billable Contact Hours

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

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 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 processes 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 processes that enhance creativity and also those elements that inhibit it.

This course surveys the history of East Asia from its beginning to modern times. It emphasizes the social, political and economic institutions that have shaped the civilization of this region.

This course examines the history of African-Americans from their African origins to the present. Special emphasis is placed on the cultural development and contributions of black Americans and the ever-changing dimensions of racism and discrimination in American society. This course will help the student understand the integral role that African-Americans have played in our nation's history, and to perceive that the very foundation of the American experiment rests on cultural diversity.

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 is an introduction and overview of information security/assurance for incoming students. This course provides an introduction and overview of information security/assurance for incoming students. This course will enhance technical, communication, problem solving and teaming skills as they relate to the study of information security and information assurance. This course will also cover a broad spectrum of pertinent IS/IA base information, including voice and data network connectivity. In addition an introduction to cryptography, intrusion detection systems, data firewalls, malicious software, information operations and warfare, denial of service attacks, regulations, law and governance.
105 Everyday Computing and Social Responsibility 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS Test
F, W

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.

JOURNALISM (JOURN)

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

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

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

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

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

This course is designed to introduce students to the wide variety of digital story-telling tools. As consumers turn from traditional news sources to the World Wide Web, journalists need to learn a new portfolio of skills, from handling breaking news in real time to blogs, tweets, podcasts, video, audio, multi-media, linking, 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 using traditional journalism conventions, such as accuracy, fairness and comprehensive news gathering and reporting, while using digital new media tools.

251 Photjournalism 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS test
F

This course is an introduction to the basic principles and practices of photожournalism, 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 photожournalism also will be covered, as well as the impact of new technology and emerging fields in photожournalism. Students will develop a digital portfolio of images, and may cover news and feature assignments for the student newspaper and Web site.

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)

(See Product and Process Technology)

MARKETING COMMUNICATIONS (MCOM)

201 Principles of Marketing 3 Credit Hours
3 Billable Contact Hours
Prerequisite: ENGL 090 and RDG 090 or qualifying scores on ACT or COMPASS tests
F, W

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: One year high school algebra
F, W

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

121 Nuclear Plant Materials 3 Credit Hours
4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS test
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, etc.

215 Metallurgy 3 Credit Hours
4 Billable Contact Hours
Prerequisite: MATL 101
F

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)

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

090 Basic Mathematics Skills  3 Credit Hours 3 Billable Contact Hours
Prerequisite: This class does not count toward graduation.
Basic Mathematics Skills will provide instruction in elementary arithmetic skills and mathematical operations and their applications, with early introduction to integers and algebraic concepts. This approach provides students with the necessary tools to succeed in developmental math and prepares them for future math courses. The content of the course includes operations with whole numbers, whole-number and decimal fractions, ratio and proportion, percent, introduction to variables and algebraic concepts, emphasis on problem-solving skills, vocabulary comprehension, real-world applications and calculator fundamentals. Some topics must be completed without the use of a calculator. The purpose of the course is to prepare students for the transition from arithmetic to algebra. The Basic Mathematics Skills course will be graded on a pass/fail mastery basis. The institutional credits earned in this course do not count toward graduation. This course does not fulfill the math competency requirements. Internet access is mandatory.

092 Beginning Algebra  4 Credit Hours (formerly MATH 150) 4 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests.
Formerly MATH 150, this course covers fundamental concepts of algebra factoring and solutions to linear equations. It also includes solutions of rational equations, quadratic equations and systems of equations. This course is intended for students who have had no high school algebra or feel a need to review elementary algebra. Internet access is mandatory.

119 Elementary Technical Mathematics  2 Credit Hours 2 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests
This course provides basic mathematics preparation for students in technology programs. It emphasizes fundamental operations of algebra and the solution of linear equations relating to technical applications. The course also includes estimation, scientific and engineering notation, proportion and variation, measurement systems and conversion methods, precision, accuracy and error. The purpose of this course is to acquaint students with the type of mathematics that is used in the technical area.

124 Technical Mathematics II  4 Credit Hours 4 Billable Contact Hours
Prerequisite: MATH 119
This course is designed to provide advanced mathematics preparation for students in technology programs. It emphasizes concepts and applications of algebra, geometry and trigonometry to technical areas. The course includes geometry, graphs and charts, functions and graphs, trigonometry, vectors and polar coordinates, systems of equations, logarithms and statistics.

125 Mathematics for Allied Health  3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 090 or qualifying scores on ACT or COMPASS tests
This course covers practical application of addition, subtraction, multiplication, division, decimals, fractions, conversion of units, ratio and proportion problems, estimation (including reasonableness of numerical result), precision, accuracy, variation, measurement systems, conversion methods, review of the Roman numeral system, use of algebraic formulas and solving algebraic word problems as related to the medical profession. The purpose of this course is to give the student competency in the mathematics used in the medical profession. Calculator use will not be permitted in this course.

151 Intermediate Algebra  4 Credit Hours 4 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests.
This course covers properties of real numbers, solutions of first- and second-degree polynomial equations and inequalities, systems of equations and their graphs, basic properties of logarithms, complex numbers, basic right triangle trigonometry and laws of sines and cosines. The purpose of this course is to prepare students for the transition to college algebra. Internet access is mandatory.

154 Mathematics Explorations  4 Credit Hours 4 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS test
This is a college-level course designed primarily for non-math and non-science transfer majors with the purpose of introducing them to the nature of mathematics as it applies to both the practical and the abstract. Students will gain understanding in the areas of sets, logic, probability, statistics, algebra, geometry and math as they apply to the modern world. The history and the future of mathematics will be interspersed throughout the course as they apply to each topic. Topics will be explored with the use of computers, problem solving, critical thinking and group/self-discovery.

156 Math for Elementary Teachers I  3 Credit Hours 3 Billable Contact Hours
Prerequisite: MATH 151 or qualifying score on ACT or COMPASS test
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.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Billable Contact Hours</th>
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<tbody>
<tr>
<td>157</td>
<td>College Algebra</td>
<td>3</td>
<td>3</td>
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<td></td>
<td>Prerequisite: MATH 151 or qualifying score on ACT or COMPASS test</td>
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<td>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.</td>
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<td>159</td>
<td>Trigonometry and Analytical Geometry</td>
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<td>Prerequisite: MATH 157</td>
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<td>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.</td>
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<td>160</td>
<td>Math Applications in Engineering Technology</td>
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<td>3</td>
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<td>Prerequisite: MATH 124 or MATH 159 or MATH 164</td>
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<td>This course is an introduction to the concepts of statistics and calculus as they apply to engineering technology, focusing on the application of spreadsheet and math analysis software. Computer resources provided include Microsoft Excel and the Maple computer algebra packages. Topics range from experimental data reduction to numerous examples from mechanical and electrical systems.</td>
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<td>162</td>
<td>Introduction to Statistics</td>
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<td></td>
<td>Prerequisite: RDG 090 and ENGL 090 and MATH 151 or 157 or 159 or 164 or 171 or 172 or 251 or 271 or 273 or qualifying score on ACT or COMPASS test</td>
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<td>A basic course to acquaint the student with the theory and application of statistical methods to engineering, health, social and business problems. Topics considered are graphical representation of data, central tendency measures, bivariate data, probability, distribution, sampling, hypothesis testing and correlation aspects. Out of classroom use of microcomputers will be expected.</td>
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<td>164</td>
<td>Precalculus</td>
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<td>Prerequisite: MATH 151 or qualifying score on ACT or COMPASS test</td>
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<td>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.</td>
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<td>166</td>
<td>Math for Elementary Teachers II</td>
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<td>Prerequisite: MATH 156</td>
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<td>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.</td>
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<td>171</td>
<td>Calculus I</td>
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<td>Prerequisite: MATH 159 or MATH 164 or qualifying score on ACT or COMPASS tests</td>
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<td>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.</td>
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<td>172</td>
<td>Calculus II</td>
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<td>Prerequisite: MATH 171</td>
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<td>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.</td>
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<td>251</td>
<td>Introduction to Linear Algebra</td>
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<td>Prerequisite: MATH 171</td>
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<td>This course is an introduction to linear algebra. The content of the course includes methods for solving systems of equations, matrices, vector spaces, inner product spaces, eigenvalues and eigenvectors and linear transformations. The purpose of this course is to introduce students to linear algebra. Specifically, the course prepares students to work with abstract mathematical structures and multivariate problems.</td>
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<td>271</td>
<td>Calculus III</td>
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<td>Prerequisite: MATH 172</td>
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<td>Calculus III is the continuation of the principles of calculus applied to multivariable functions. The content of the course includes partial differentiation, multiple integration and vector analysis. The purpose of the course is to continue the analysis of functions with calculus to multivariable functions.</td>
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<td>273</td>
<td>Introduction to Differential Equations</td>
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<td>Prerequisite: MATH 172</td>
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<td>This is an introduction to ordinary differential equations. The content of the course includes methods for solving first- and second-order ordinary differential equations, systems of differential equations, power series solutions and Laplace transforms. The purpose of this course is to introduce students to the theory and application of differential equations. Specifically, the course prepares students to apply differential equations to scientific, engineering and economic problems.</td>
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MECHANICAL DESIGN TECHNOLOGY (MDTC)

109 Mechanical Blueprint Reading  2 Credit Hours
2 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS 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
Prerequisite: MDTC 101 or MDTC 109 or MDTC 151 or MDTC 160 or MDTC 161
F, W
This course is an introduction to the practices and procedures for developing optimum plant layouts for production and material handling. Students will follow the process of analyzing and developing information to produce a plant layout. Print reading skills will be developed with an emphasis on reading industrial equipment drawings for equipment installation and movement of materials including conveyors.

152 Descriptive Geometry  4 Credit Hours
6 Billable Contact Hours
Prerequisite: MDTC 160 or MDTC 151
W
This course consists of lectures, discussions, and homework assignments. 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 scores on ACT or COMPASS test. Students who have taken MDTC 101 and MDTC 121 should not take MDTC 160.
F, W
This course is a first exposure to the drafting and design field. Sketching, drafting equipment, basic drafting techniques, geometry, multiview drawings, dimensioning and sectional views will be taught using both sketching techniques and computer aided drafting (CAD) software. A major emphasis will be placed on current drafting standards and procedures.

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

226 Geometric Dimensioning and Tolerancing  3 Credit Hours
Prerequisite: MDTC 101 or MDTC 151 or 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 ANSI/ASME Y14.5M-1994. Emphasis is placed on how GD&T is utilized by engineering, manufacturing and inspection departments.

228 Introduction to SolidWorks-CSWA  3 Credit Hours
Prerequisite: RDG 090 or qualifying score on ACT or COMPASS tests.
F
The Solid Modeling-SolidWorks course is designed for SolidWorks students, designers and engineers. This course is the first step toward becoming a proficient SolidWorks user. It covers the core concepts of 3D parametric modeling, common part design, assembly creation, and drawing generation. Additionally, the course is designed to help users prepare and successfully pass the Certified SolidWorks Associate (CSWA) exam.

232 Advanced SolidWorks-CSWP  3 Credit Hours
3 Billable Contact Hours
Prerequisite: MDTC 228
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.

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. Students who have successfully completed both MDTC 229 and MDTC 230 may not enroll for credit in this course.

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 representatives from industry. Emphasis is placed on the use of design principles and computer technology in planning, managing and completing a design project. Team design projects will be integrated into the course.
MECHANICAL ENGINEERING TECHNOLOGY (METC)

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

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

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

In this course, students learn concepts in the use of profiles and parametric features as building blocks for 3D solid models, using the CATIA/DELMIA part and assembly modeling software. Advanced topics of NURBS surfacing and assemblies, as well as the creation of 2D drawings will be discussed. Software specific topics of Boolean Operations and best practices will also be explored.

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

In this course, students learn concepts in the use of profiles and parametric features as building blocks for 3D solid models using the Pro Engineer 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).

206 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: MATH 160 and METC 170 and METC 180 and METC 208. NOTE: METC 220 will replace METC 180 and 208. F, 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 160 or MATH 164 MATH 171 MATH 172 or qualifying score on COMPASS or ACT tests F, W

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

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

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

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 plastic 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.
The course is to improve the student’s ability to perform musically.

A permission slip is required to register. The purpose of this course is to improve the student’s ability to perform musically.

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

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

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

This course is highly suggested for future elementary teachers but open to all students. The instructor assumes the students have not had previous formal music instruction. The course covers basic knowledge and skills needed to incorporate music into the regular classroom as well as methods of using music to enhance teaching of academic subjects. Mandatory off campus student teaching assignments are required.

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

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

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

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

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

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

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

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

NUCLEAR ENGINEERING TECHNOLOGY (NUET)

100 Nuclear Industry Fundamentals  2 Credit Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

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

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

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

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

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

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

The course will train students on how to detect visible surface discontinuities, especially those found in welded joints. The fundamentals of light and vision, visual perception and different types of equipment used to detect discontinuities on the surface will be covered. More emphasis on practical welding as well as inspection of weld joints using a variety of weld gauges will be done during the practical sessions. Material attributes and physiological factors affecting the performance and judgment of the inspector will be studied along with the procedure and applicable codes for acceptance and rejection of discontinuities. Students will perform a complete series of laboratory exercises to provide hands-on training in the practice of each test procedure.
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 review 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.

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 review 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.

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.

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.

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

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

This course is held in cooperation with DTE’s Fermi2 Nuclear Power Plant Training Center. The course consists of 40 hours of training activities held on-site at Fermi2. Training is conducted by instructors from the Nuclear Training Center. The emphasis is on hands-on maintenance training with the same facilities used by plant personnel. Training takes place over five consecutive days, and includes a tour of the control room simulator, and an Instrumentation and Control walkdown in the plant. Five hours are planned for the main steam and feedwater, and the electronic systems which provide indications and automated plant protection. The students will be challenged to understand many of the design attributes of these systems and to directly relate those attributes using the various systems drawings. Certain significant operating experience issues will be introduced and the students will be challenged to relate these issues directly to the applicable plant systems and drawings. Schematic drawings of safety-significant motor-operated valves will be covered in detail as an example of component electrical controls. This course will also introduce the students to the practice of using drawings to support the planning of maintenance activities and methods of tagging energy sources to protect personnel during maintenance.

This course is held in cooperation with DTE’s Fermi2 Nuclear Power Plant Training Center. The course consists of 40 hours of training activities held on-site at Fermi2. Training is conducted by instructors from the Nuclear Training Center. The emphasis is on hands-on maintenance training with the same facilities used by plant personnel. Training takes place over five consecutive days, and includes a tour of the control room simulator, and an Instrumentation and Control walkdown in the plant. Five hours are planned for the main steam and feedwater, and the electronic systems which provide indications and automated plant protection. The students will be challenged to understand many of the design attributes of these systems and to directly relate those attributes using the various systems drawings. Certain significant operating experience issues will be introduced and the students will be challenged to relate these issues directly to the applicable plant systems and drawings. Schematic drawings of safety-significant motor-operated valves will be covered in detail as an example of component electrical controls. This course will also introduce the students to the practice of using drawings to support the planning of maintenance activities and methods of tagging energy sources to protect personnel during maintenance.

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### 220 Power Plant Components
3 Credit Hours
4 Billable Contact Hours
Prerequisite: NUET 100 and NUET 130 and ELEC 125 and ELEC 133

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

### 230 Plant Systems 2
3 Credit Hours
4 Billable Contact Hours
Prerequisite: NUET 100 and NUET 130

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

### 240 Reactor Theory, Safety and Design
3 Credit Hours
4 Billable Contact Hours
Prerequisite: NUET 100 and MATL 121 and PHY 151 and CHEM 151

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 radionucide transmutation; reactor safety principles including emergency core cooling and engineered safety features; design basis accident and core damage mitigation; case studies.

### NURSING (NURS)

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

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

**100 RN Student Nurse Success**
1 Credit Hour
1 Billable Contact Hour
Prerequisite: Admission to the RN program

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 study techniques as well as learn to balance school and personal demands.

**103 Adapting Throughout the Life Cycle**
9 Credit Hours
17 Billable Contact Hours
Prerequisite: Acceptance into the nursing program. Must also register for BIOL 157

This course provides an introduction to the concepts of nursing practice. The program's organizing framework—based on the content threads of stress-adaptation, holistic health, nursing process, communication, human needs, growth and development, community and accountability—are introduced. Critical thinking, which is integral to the nursing process, will be emphasized as a means of facilitating the client's adaptation to stressors throughout the life cycle. Special focus will be placed on the needs, culture, and lifestyle and community resources available to the elderly. The clinical content will be applied 12 hours weekly utilizing the campus laboratory, hospital settings and nursing home settings.

**104 Adapting to Common Stressors I**
6.93 Billable Contact Hours
Prerequisite: BIOL 157 and NURS 103. Must register for NURS 105

This course utilizes a holistic view to study the nursing care of the adult, mentally ill client's adaptation to stressors and crises. The student will use critical thinking to integrate psychopathology in assessing, planning, implementing and evaluating care of clients with health care needs in the mental and spiritual spheres. Special focus will be placed on communication, therapeutic use of self, nurse-client relationship, stress adaptation and holistic health in the care of the mentally ill. During this course, the student will have 12 hours per week for five weeks of clinical instruction in the acute psychiatric care setting.

**105 Adapting to Common Stressors II**
5 Credit Hours
10.53 Billable Contact Hours
Prerequisite: BIOL 157 and NURS 103. Must also register for NURS 104

This course utilizes a holistic view to study the adult client's adaptation to commonly occurring health problems. The student will use critical thinking to integrate holistic theory and basic pathophysiology in assessing, planning, implementing and evaluating care for clients with medical-surgical health care needs. Special focus will be placed on chronic illness and perioperative care. During this course, the student will have 12 hours per week for 10 weeks of clinical instruction in the acute care setting.
### 204 Family Adapting I: Obstetrical 4.5 Credit Hours
#### Prerequisite: NURS 205

This course utilizes a holistic view to study the family and its adaptation to pregnancy and childbirth. Critical thinking skills are emphasized through the application of the nursing process. Core components of this course include family growth and development; health promotion and maintenance; cultural and ethnic variations regarding health and illness; psychological, social and spiritual stressors impinging on families; community resources available to families and disease pathologies in relation to the maternity cycle. During this course, students will have 12 hours per week of obstetrical nursing clinical instruction in the hospital and selected community settings.

### 205 Family Adapting II: Pediatric Nursing 4.5 Credit Hours
#### Prerequisite: NURS 105

This course utilizes a holistic view to study the childrearing family and its adaptation to stressors. Critical thinking skills are emphasized through the application of the nursing process. The focus of this course includes child and family growth and development; health promotion and maintenance; cultural and ethnic variations regarding health and illness; psychological, social and spiritual stressors impinging on families; and community resources available to families. Special emphasis will be placed on pediatric pathophysiology. During this course, students will have 12 hours per week of pediatric clinical instruction in the hospital and selected community settings.

### 209A Adapting Multiple Stressors I 10 Credit Hours
#### Prerequisite: NURS 205

This course utilizes the holistic view to study adult patients and their adaptation to severe stressors. The student will become increasingly sophisticated in the use of the nursing process and critical thinking skills to facilitate adaptation to serious physiologic insults. Students will have an opportunity to gradually increase organizational skills through an expanding client care workload in medical-surgical settings. During this course, students will have 12 hours per week of clinical instruction in the hospital, community or short stay settings.

### 209B Adapting Multiple Stressors II 3 Credit Hours
#### Prerequisite: NURS 209A and NURS 210

This four-week capstone course provides theoretical content related to managing groups of clients and in communicating with health team members. During the final three weeks, students have the opportunity to increase their client-care workload in a medical-surgical setting utilizing a full-time preceptorship arrangement. Critical thinking skills continue to be emphasized through active clinical decision making. Clinical practice during this time will be full-time work for three weeks.

### 210 Nursing Seminar 3 Credit Hours
#### Prerequisite: NURS 205

This course facilitates the student's socialization into the nursing profession. Critical thinking skills are emphasized through discussion related to the following topics: historical perspectives of nursing; nursing education; issues, trends and problems of health care and nursing practice, and legal, professional, ethical and social responsibilities of the nurse. Special focus will be on basic management skills, preparation for employment and career development.

### PHILOSOPHY (PHIL)

#### 151 Introduction to Logic 3 Credit Hours
#### Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

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

This course provides an introduction to the types of philosophy and the study of the great thinkers' contributions to studies which investigate the principles and facts of reality, human nature and basic problems of conduct relevant to man. Emphasis is on early Greek philosophy: Plato and Aristotle. This course will include writing assignments.

#### 253 Introduction to the Philosophy of Religion 3 Credit Hours
#### Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course presents an introductory inquiry into the study of religion and its meaning and truths, emphasizing the historical and structural aspects of religion, religious experience and religious symbols exemplified through various religious traditions. 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 ideas which influence our century.

### PHOTOGRAPHY (PHOTO)

#### 151 History of Photography 3 Credit Hours
#### Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course is an exploration of the photographers and evolution of the photographic process from its inception to the present. Emphasis will be placed on individual photographers and the various artistic photographic progressions.
PHYSICAL SCIENCE (PHYSC)

151 Physical Science 4 Credit Hours 5 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 and MATH 092 or MATH 150 or qualifying score on ACT or COMPASS tests

This course serves as an introduction to physical science for both applied and non-science majors. Selected topics on astronomy, chemistry, geology and physics are included. Emphasis is placed on understanding the fundamental principles of the physical sciences. It will also include a discussion of the limitations and potential applications of the physical sciences. This course requires laboratory work.

152 General Physics II 4 Credit Hours 6 Billable Contact Hours
Prerequisite: PHY 151

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.

155 Introduction to Comparative Politics 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests

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 research the Internet and museums and travel to enhance their learning of the differences between political systems and institutions.
221 State and Local Government 3 Credit Hours
Prerequisite: POLSC 151

This course is a study of state and local government units, including types of organizations and 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.

251 Criminal Law 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course traces the history and development of criminal law and gives attention to definitions of crimes and their elements, penalties and defenses.

252 International Relations 3 Credit Hours
Prerequisite: POLSC 151 or HIST 154 or HIST 155

Students will examine the fundamental and persistent forces which influence world politics and the foreign policies of states. Through theoretical, ideological and pragmatic approaches, students will explore the historical, economic, geographical, social and cultural phenomena that impact international politics.

255 Police Organization & Administration 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

The administration of police-line operations, including patrol, investigative functions, traffic, vice control, youth services and non-crime functions are emphasized. The purpose of this course is to have the student understand the administrative role a police department has in order to provide police services to a community.

256 Police Operations 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course focuses on the day-to-day line operation of the police department. Emphasis focuses on patrol, reports, communications, arrests, officer survival skills, community relations and jail operations.

PRINCIPLES OF HUMAN NURSING PROFESSION

100 PN Student Nurse Success 1 Credit Hour
Prerequisite: Admission to PN program; students should take course prior to starting PN program

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 personal demands.

121 Fundamentals of Practical Nursing 17 Billable Contact Hours

This course serves as the foundation from which other courses will build and expand. This course includes skills and concepts basic to nurse and nurse aide training and also introduces the role of the licensed practical nurse and concepts of nursing practice for the licensed practical nurse. The program’s organizing framework, based on the Stress-Adaptation Model, holistic health, basic human needs, growth and development concepts, nursing process (clinical problem solving), communication and documentation, health promotion and maintenance (which includes psycho-socio-cultural awareness and teaching/learning sub-concepts) and accountability, is introduced. Meeting the needs of clients experiencing change in health status is the nursing focus. The course includes mathematics for medication administration and skills related to oral and parenteral administration as well as other routes. Additionally, special emphasis will be placed on the needs of the elderly and nutritional support for all clients. The clinical component will be applied in the campus laboratory, hospital and nursing home settings.

122 Practical Nursing Care of Adults I 8 Billable Contact Hours
Prerequisite: PNUR 120 or PNUR 121

The focus of this course is the use of clinical problem-solving skills and nursing process to assist adults with common medical-surgical problems and select acute and chronic disorders in meeting health care needs. The course builds on the program’s organizing framework. Students will study in the classroom and campus laboratory and provide basic nursing care to adults in medical-surgical acute care clinical settings.

123 Mental Health for Practical Nursing 2 Credit Hours

This course introduces common mental illnesses and usual treatment modalities that a licensed practical nurse will commonly see in the hospital or nursing home. The course will also include nursing measures that support emotional, mental and social well being and coping and adaptation mechanisms that assist clients in adapting to disabilities, unexpected changes and stressful events. The student will have planned observational experiences in an acute care facility or clinics but no clinical experiences.

124 Practical Nursing Care of Adults II 6 Credit Hours
Prerequisite: PNUR 120 or PNUR 121

The focus of this course is the use of clinical problem-solving skills and nursing process to assist adults with common medical-surgical problems and select acute and chronic disorders in meeting health care needs. The course builds on the program’s organizing framework. Students will study in the classroom and campus laboratory and provide basic nursing care to adults in medical-surgical acute care clinical settings.

125 Practical Nursing Care of Pediatric Clients 5 Billable Contact Hours
Prerequisite: PNUR 120 or PNUR 121

The focus of this five-week course is practical nursing care of hospitalized infants, children, adolescents, and their families and caretakers. Special emphasis will be placed on common pediatric disorders, prevention and early detection of disease, as well as growth and development of the pediatric client and the family. Pharmacologic and nutritional needs of the pediatric client and variations of diet are integrated into content. Students will study in the classroom, campus laboratory and clinical settings.
PRODUCT AND PROCESS TECHNOLOGY (MECH)

126 Practical Nursing Care of Obstetrical Clients 3 Credit Hours 5 Billable Contact Hours
Prerequisite: PNUR 125 F

This course introduces the student to operation of basic machining tools, care and use of hand tools and common measuring equipment used in the machine shop. Theory and hands on operation of manual mill, lathe, grinding machine, band saws and basic operation of Computerized Numerical Machines and wire discharge machine is emphasized in this course. Other topics covered include basic metallurgy of metal cutting, machine tool theory. Appropriate terminology is to be used and safety is stressed.

127 Practical Nursing Care of Adults II 4 Credit Hours 8 Billable Contact Hours
Prerequisite: PNUR 124 and PNUR 125 F

This course will focus on issues related to practice of the licensed practical nurse, such as legal and ethical practice issues, historical perspectives of LPN education, career development and job seeking, trends in health care and the professional responsibilities of being an LPN.

128 Issues in Practical Nursing 2 Credit Hours 2 Billable Contact Hours
Prerequisite: PNUR 125 F

This course introduces the student to operation of basic machining tools, care and use of hand tools and common measuring equipment used in the machine shop. Theory and hands on operation of manual mill, lathe, grinding machine, band saws and basic operation of Computerized Numerical Machines and wire discharge machine is emphasized in this course. Other topics covered include basic metallurgy of metal cutting, machine tool theory. Appropriate terminology is to be used and safety is stressed.

129 Management Concepts for the Practical Nurse 3 Credit Hours 8.66 Billable Contact Hours
Prerequisite: PNUR 125 F

This course will utilize a holistic view of the childrearing family and its adaptation to pregnancy and childbirth. Practical nursing students will study the nursing care related to ante/intra/postpartum and newborn care. Basic family growth and development, family health promotion and maintenance, common cultural and ethnic variations in childrearing practices, common childrearing complications, influences of other health disorders and family planning are also covered. Students will study in the classroom, campus laboratory and clinical settings.

130 Issues in Practical Nursing 2 Credit Hours 2 Billable Contact Hours
Prerequisite: PNUR 125 F

This course will focus on issues related to practice of the licensed practical nurse, such as legal and ethical practice issues, historical perspectives of LPN education, career development and job seeking, trends in health care and the professional responsibilities of being an LPN.

131 Management Concepts for the Practical Nurse II 3 Credit Hours 8.66 Billable Contact Hours
Prerequisite: PNUR 125 F

This course will focus on issues related to practice of the licensed practical nurse, such as legal and ethical practice issues, historical perspectives of LPN education, career development and job seeking, trends in health care and the professional responsibilities of being an LPN.
112 Pneumatics 4 Billable Contact Hours
Prerequisite: MECH 111
This course covers advanced circuit design, hardware theory and application 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 4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
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 4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
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 Certification 4 Billable Contact Hours
Prerequisite: MECH 117
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 Refricerant Technician Universal Type IV Certification Test, which will be administered on the 14th week of class.

131 Introduction to Automated Manufacturing 4 Billable Contact Hours
Prerequisite: RDG 090 or qualifying score on ACT or COMPASS tests.
This is a survey course for the world of robots. 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 robot programming and operation through both teach pendants and microcomputers. Basic configurations with programmable controllers will be included, with an abbreviated introduction to fluid power and ladder logic.

134 Machine Tool Theory 2 Billable Contact Hours
Prerequisite: MECH 103
This course covers advanced machine tool techniques with emphasis on lathes and mills. There will be detailed coverage of machine speeds, feeds and cutter materials. Students are introduced to the field of computer numerical control (CNC) of machine tools. Basic die making is also covered.

201 CAD/CAM I 4 Billable Contact Hours
Prerequisite: MECH 103 and MDTC 160
This course is an introduction to CAD/CAM using Master CAM software with emphasis on two and three dimensional design and tool path generation. Models will be created to demonstrate surfacing, generating and verifying G&M code relevant to a particular machine post processor. Emphasis is on generation of code using wireframe part geometry. Students will learn all relevant commands to generate part geometry and generate machine code for aluminum and steel parts choosing appropriate machining parameters. On completion of this course students will have an opportunity to sit for the Master CAM certification test. Appropriate theory and practice of safe work methods will be emphasized. This course was previously titled Introduction to CAD/CAM (4 credits).

216 Industrial Plumbing & Pipefitting II 4 Billable Contact Hours
Prerequisite: MECH 116
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 Solids 4 Billable Contact Hours
Prerequisite: MECH 201
This course is second in sequence to the one on introduction to CAD/CAM. Master CAM software will continue to be used. Emphasis will be on machining two and three dimensional objects and solids. Editing objects, extruding, sweeping, loft, rotation features of the software in manipulating the object will be demonstrated. Students will learn to manage views, levels of entities within the object as specified in the part drawing and generate surfaces to machine. Other aspects of the course will include importing and exporting graphical data from CAD design software with the purpose of generating code to machine complex surfaces, handling data generated for rapid prototyping and discussing lean manufacturing concepts. The student will be prepared to take the Master CAM certification test on completion of this course. Appropriate theory and practice of safe work methods will be emphasized.
PSYCHOLOGY (PSYCH)

151 General Psychology 3 Credit Hours
Prerequisite: ENGL 090, RDG 090, and MATH 092 or MATH 150 or higher or qualifying score on COMPASS or ACT tests
Subject matter begins with an introduction to the major models of human behavior along with appropriate research methodology, including applied statistics. The operational framework is then applied to the following topics: physiological processes, sensation, perception, learning, motivation, emotion, stress, development (life span), personality, adjustment, mental health and therapeutic techniques, personal growth and social processes. Useful information regarding “real life” application is emphasized throughout the course. It is assumed that in the majority of cases this may be the only psychology course the student will experience; as the field of psychology has shifted from theory-based to fact-based, it appears both desirable and possible to expose students to useful information for everyday living while providing comprehensive coverage of the current major concepts, exploratory models and research procedures inherent in an introductory psychology course.

152 Psychology of Personality/Adjustment 3 Credit Hours
Prerequisite: PSYCH 151
This course applies psychological principles to the problems of the individual's adjustment to everyday life. Topics include adjustment processes, personality development, theories of personality, behavior disorders, psychotherapy techniques, human relationships, defense mechanisms and mental health.

153 Social Psychology 3 Credit Hours
Prerequisite: PSYCH 151
This course emphasizes the individual as a member of society. The development of changing values, attitudes, social behavior and an awareness of current problems of socialization are explored. Several theoretical frameworks, including attribution and social-cognitive processes, are examined. The purpose of this course is to present concrete, factual materials and applications to the students.

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

QUALITY SYSTEMS TECHNOLOGY (QSTC)

105 SPC Basics 1 Credit Hour
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests
An introductory course for those who need a basic understanding of variation, statistical fundamentals, data gathering and control charting.

111 Quality Management 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying score on ACT or COMPASS tests
This course will introduce students to the management approach that developed from principles of Total Quality. Students will study the principles, concepts and practices of quality management as developed by experts like Deming, Juran, Crosby and others. Students will examine the role of organizations involved in world-class competition. Emphasis will be placed on customer satisfaction, employee empowerment, process identification, and measurement and continual improvement.

115 Statistical Process Control 3 Credit Hours
Prerequisite: MATH 121
This course focuses on the basic concept of variation, sampling methodology and basic six-sigma improvement tools including control charting, significance testing, process capability and DOE. Techniques used are relevant to manufacturing and service environments.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Contact Hours</th>
<th>Prerequisite</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>Introduction to Quality Systems</td>
<td>3</td>
<td>3</td>
<td>RDG 090 or qualifying scores</td>
<td>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.</td>
</tr>
<tr>
<td>150</td>
<td>Introduction to Metrology</td>
<td>3</td>
<td>4</td>
<td>MDTC 101 or MDTC 109 or MDTC 151 or MDTC 160 or MDTC 161</td>
<td>This course introduces the fundamentals of dimensional measurement, production gages and gaging techniques. Interpretation of geometric tolerances will also be covered with respect to their implications for inspection. Measurement techniques will emphasize proper use of open-setup equipment, including hand tools, gage blocks, surface plates and accessories, analog and digital measuring devices, optical comparator, pneumatic gages and coordinate measuring machines (CMM).</td>
</tr>
<tr>
<td>160</td>
<td>Team Problem Solving</td>
<td>3</td>
<td>3</td>
<td>RDG 090 or qualifying scores</td>
<td>This course is designed to build the student’s ability to respond to the needs of groups as a team member and team leader. Students will study team structuring, roles of team members and tools used in facilitating teams that contribute to organization quality. Kaizen, six-sigma, 8D and other effective team-based solutions will be modeled. Techniques used are applicable to manufacturing and service environments.</td>
</tr>
<tr>
<td>210</td>
<td>Advanced Metrology</td>
<td>3</td>
<td>4</td>
<td>QSTC 150</td>
<td>This course covers advanced metrological techniques, including CMM operation, Optical and Electronic Measuring and Graphical Inspection Analysis (paper gaging). Laboratory work concentrates on CMM operation and programming using the PC DMIS operating system.</td>
</tr>
<tr>
<td>220</td>
<td>Calibration and Gage R &amp; R</td>
<td>3</td>
<td>4</td>
<td>RDG 090 or qualifying scores</td>
<td>This course covers techniques of gage calibration and gage repeatability and reproducibility studies (Measurement System Analysis). Hands-on work includes calibration of measuring tools and computerized gage documentation using Gage-trak software.</td>
</tr>
<tr>
<td>230</td>
<td>Documentation &amp; Audit Preparation</td>
<td>3</td>
<td>3</td>
<td>QSTC 111</td>
<td>This course examines techniques for the development and implementation of quality systems. Participants explore internal auditing techniques and preparation for third-party audits. The focus is on understanding quality system requirements and effective documentation alternatives to meet those requirements. ISO9000:2000, QS9000 (including the TE supplement), TS16949, ISO14000 and other assessment criteria are defined and applications are explored for service businesses and manufacturing.</td>
</tr>
<tr>
<td>090</td>
<td>Basic Reading Skills</td>
<td>3</td>
<td>3</td>
<td></td>
<td>This is a basic reading course emphasizing essential skills for building literal and critical comprehension proficiency. A COMPASS test score and a counselor’s consultation provide the basis for selecting this reading instruction. This course does not count toward graduation.</td>
</tr>
<tr>
<td>100</td>
<td>Respiratory Care Techniques I</td>
<td>8</td>
<td>10</td>
<td>Acceptance into the respiratory therapy program. Must also register for RTH 104.</td>
<td>This classroom and laboratory course is an introduction to the duties and responsibilities of respiratory care practitioners. Topics covered include a review of physical science, cardiopulmonary anatomy and physiology, cardiopulmonary resuscitation, basic nursing skills, medical gas and aerosol administration, employee health and safety, pulmonary medications and an orientation to clinical sites.</td>
</tr>
<tr>
<td>104</td>
<td>Cardiopulmonary Assessment</td>
<td>3</td>
<td>3</td>
<td>Acceptance into the respiratory therapy program.</td>
<td>This course is an introduction to basic physical and laboratory assessment of cardiopulmonary patients. Topics include basic pulmonary function, medical lab values, chest imaging, electrocardiograms, blood gas analysis, and bedside patient assessment equipment and techniques.</td>
</tr>
<tr>
<td>110</td>
<td>Respiratory Care Techniques II</td>
<td>5</td>
<td>7</td>
<td>RTH 100. Must also register for RTH 116.</td>
<td>This classroom and laboratory course continues the introduction to basic duties of respiratory care practitioners. Emphasis will be placed on post-assessment, basic therapy modalities, airway management, cardiopulmonary diagnostic equipment and techniques and an introduction to continuous mechanical ventilation.</td>
</tr>
</tbody>
</table>
This course provides a hospital experience in which previously acquired classroom theory and laboratory skills can be exercised. Skills practiced include those associated with patient respiratory assessment, oxygen therapy, a wide range of bronchopulmonary hygiene therapies and equipment processing. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

This course gives the student an introduction to the most common cardiopulmonary diseases and conditions encountered in the clinical setting. Topics include lung defense mechanisms, common cardiopulmonary manifestations of disease, obstructive lung diseases, restrictive lung diseases, and pulmonary diseases/conditions resulting in critical illness.

Mechanical ventilation topics are continued in this classroom and laboratory course. Topics presented include volume pre-set and pressure pre-set ventilator equipment and application techniques and basic ventilation management of adult and neonatal patients.

This clinical course provides three types of experience for the respiratory therapy student. First, there will be a continuation of basic respiratory care modalities from the previous semester. Second, the diagnostic areas of basic pulmonary function testing, arterial blood gas puncture and analysis and 12-lead electrocardiography will be introduced. Third, the student will receive an orientation to volume control ventilation in the adult ICU environment. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

This course allows students to assist in the pulmonary management of adults on mechanical ventilation. An integrated approach to patient care will be stressed through accurate patient assessment and application of various equipment and therapies. Students will function as a member of the health care team. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

This course advances the student’s knowledge of cardiopulmonary physiology. The cardiac sections cover gross and histologic cardiovascular anatomy, neural/endocrinological 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 control of ventilation and lung responses to changing environments and conditions.

This classroom and laboratory course covers the cardiopulmonary equipment, techniques and management theory for the adult patient in an intensive care unit. Topics include critical care patient assessment, review of fundamental concepts in ventilation techniques and management of adult patients in surgical, medical, pulmonary, cardiothoracic and neuro intensive care settings.

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This course provides an overview of general pharmacology with an emphasis on drugs used in the critical care management of cardiopulmonary conditions.

This clinical course provides a varied experience for students who are about to graduate. A major emphasis will be in assisting with the pulmonary management of neonatal patients on mechanical ventilation. Other rotations will be in a variety of advanced diagnostic laboratories and alternate site venues where respiratory therapists are employed. In addition, weekly clinic seminars will be held on campus to facilitate student learning.
This course presents a wide variety of topics for discussion. Included are respiratory care history, management and supervision, trends in allied health, research, job acquisition skills and credentialing exam preparation.

This course covers a variety of diagnostic and therapeutic settings. Pulmonary function and stress testing equipment and procedures used in advanced labs will be presented. Additional emphasis will be made in the interpretation of pulmonary function test results. Delivery of respiratory care in alternate sites will also be emphasized. Included will be goals, procedures and equipment associated with pulmonary rehabilitation, home care, and subacute and long-term care settings.

SOCIAL WORK (SWK)

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

151 Principles of Sociology 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course introduces the concepts of culture, socialization, social structure, social stratification, racial and ethnic relations and deviancy. These topics are used principally to examine life in contemporary United States. Whereas psychology focuses on individual behavior, sociology focuses on behavior that results from membership within and between groups.

152 Marriage & Family 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course examines marriage and family at various periods in American history in order to assess the same today. Topics include the variety of households, divorce, working parents, male-female relationships and economic influences on marriage and family. Partisan political views on the family are discussed.

153 Women in Society 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This is a foundation course in women’s studies. Emphasis is placed on how women have been perceived historically and the progress they have made in the context of today’s society. The concept of “voice” will be examined in each of the four units, looking at how women have been silenced and how, and if, they have recovered their “voice.”

160 Social Gerontology 3 Credit Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests
This course focuses on the aged as a social subculture of the United States. How roles and status change with age in relation to family and major social institutions and the adjustments that individuals make to these changes are examined. The impact of an aging population on society is also discussed. Special attention will be placed on similarities and differences in aging and change related to an individual’s gender, race, ethnicity and socioeconomic status.
161 Death, Loss and Grief 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course analyzes the historical, socio-cultural, psychological and political construction of death, dying and bereavement in the United States. 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.

170 Introduction to Corrections 3 Credit Hours 3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course is an introduction to the 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 surrounding the characteristics and treatment of the offender, sentencing guidelines and important issues facing the correctional system today. Field trips and observation visits are an integral part of the course.

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

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.

252 Juvenile Delinquency 3 Credit Hours 3 Billable Contact Hours
Prerequisite: SOC 151

This course deals with theories of causation and prevention with emphasis on juvenile courts, institutional treatment and community resources for prevention.

SPANISH (SPAN)

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

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.

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

This course is a continuation of grammar practice in oral and written Spanish with selected readings. Emphasis is on spoken Spanish.

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

This course continues the review of grammar practice in oral and written Spanish, based on selected readings and lectures. Conversation skills are emphasized.

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

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.

SPEECH (SPCH)

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

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

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

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

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 opportunity to learn and use nonverbal communication in interpersonal relations. Other course topics include applications to education, mental health, business, government, religion, speech and drama, as well as the effects of communication themes, techniques, symbols and formats on the thoughts, attitudes and personality of others.
THEATER (THEA)

151 Introduction to Theater 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 or ENGL 090 qualifying scores on ACT or COMPASS 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 design and make-up, theater history, directing and acting.

152 Directing/Production Technology 3 Credit Hours
3 Billable Contact Hours
Prerequisite: THEA 151 and instructor's approval.

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.

153 Readers' Theater 3 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 and ENGL 090 or qualifying scores on ACT or COMPASS tests

This course is a survey and practicum in readers’ theater materials and performance. The goal is to familiarize the student with readers’ theater as an art form and to give experience to the student with readers’ theater as a performance craft. The following aspects of readers’ theater are considered in the course: selection analysis; voice/speech development; body development; interpretation of prose, poetry, and drama; and performance of readers’ theater.

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 scores on ACT or COMPASS 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 6 Billable Contact Hours
F, W, Sp

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

101A Introduction to GMAW 2 Credit Hours
3 Billable Contact Hours
Prerequisite: RDG 090 or qualifying scores on ACT or COMPASS tests

F, W

The student is introduced to 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 scores on ACT or COMPASS tests

F, W

A continuation of WELD 101B, the student progresses to vertical-up welding and is introduced to low hydrogen electrodes and vee groove weldments.

102 Advanced SMAW 6 Credit Hours
8 Billable Contact Hours
Prerequisite: WELD 100

F, W

The major emphasis of this course is the development of welding skills utilizing the shielded metal arc (SMAW) welding process. Students will be welding vertical up, over-head and multipass with varied rods and metal thicknesses.

102A Multi-Pass Arc Welding 2 Credit Hours
3 Billable Contact Hours
Prerequisite: WELD 100

F, W

Students perfect their welding skills by welding thick section fillet welds in all positions. Expertise is developed using fast freeze and low hydrogen electrodes.

102B Code Welding Techniques 2 Credit Hours
3 Billable Contact Hours
Prerequisite: WELD 102A

F, W

Students perform several common code welds in all positions. Completion of the course requires successful guided bend tests in all positions using fast freeze and low hydrogen electrodes.
This course covers the physics and metallurgy of welding steel, aluminum and cast iron. In addition, the course covers welding procedure qualifications, welding design, industrial welding processes, equipment and parameter selection for production applications.

115 Entry Level Welding 12 Credit Hours 16.67 Billable Contact Hours
Prerequisite: WELD 100
This course is an introduction into oxy-fuel cutting, shielded metal arc welding, gas metal arc welding and gas tungsten arc welding. Machine functions and filler metal chemistry will be emphasized, as well as code and procedure requirements for a variety of industrial needs. Welding/ cutting processes covered (including laboratory applications) include: oxy-fuel cutting (OFC), plasma arc cutting (PAC), CNC plasma/ace cutting, shield metal arc welding (SMAW), gas tungsten arc welding (GTAW) and gas metal arc welding (GMAW). GTAW will be completed on a variety of ferrous and non-ferrous metals.
215 Advanced Level Welding 12 Credit Hours
16.67 Billable Contact Hours
Prerequisite: WELD 115
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 Sp, Su
This course will cover basic fabricating techniques of various pipe intersections, pipe runs and sheet metal layout for heating, plumbing and power plant installations.

240 AWS Qualification/Certification-Entry Level 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- 4 Credit Hours
Advanced Level 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 ACT or COMPASS tests and EOS 102 or ADMN 102 or 131 or equivalent keyboarding skills
Word Processing I is designed to develop proficiency in the operation of word processing software using a microcomputer system. Course content focuses on creating, saving, retrieving, editing, formatting, enhancing, printing and merging a variety of documents. Content also includes file management, introduction to microcomputer operating systems, and terminology and use of the Internet and e-mail.

103 Advanced Word Processing 3 Credit Hours
3 Billable Contact Hours
Prerequisite: WPR 102 F, W
Advanced Word Processing develops proficiency in the advanced word processing functions of Microsoft Word such as macros, sorting, tables and columns. A simulation will give additional practice in the advanced features of the software.