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**NMC. Find it here.**

[www.nmc.edu](http://www.nmc.edu)
2016-2017 Academic Calendar

FALL SEMESTER 2016
Registration Begins: March 16, 2016
Tuition Payment Due: August 2
Classes Begin: August 27
No Classes
(Labor Day holiday observed)
No Classes
(Sept. 3-5)
No Classes
(Nov. 23)
(Thanksgiving holiday observed)
Classes End: Dec. 17
Grades Entered: Dec. 21
College Closed
(combined winter holidays observed)
Dec. 23-26
Dec 30 (noon)-Jan 2, 2017

SPRING SEMESTER 2017
Tuition Payment Due: December 8, 2016
Classes Begin: January 13
Spring Break
(No Classes)
March 27-April 2
No Classes
(Spring Holiday)
April 14-16
Honors Convocation: May 5
Commencement: May 6
Classes End: May 6
Grades Entered: May 10

SUMMER SESSION 2017
Tuition Payment Due: April 25, 2017
No Classes: May 13
NMC BBQ: May 21
No Classes
(Memorial Day holiday observed)
College Closed
(Independence Day holiday observed)
Classes End: August 8
Grades Entered: August 11

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NMC. Find it here.
Northwestern Michigan College didn’t get to be the oldest community college in Michigan by staying put. At NMC, our programs are always evolving to help prepare our learners for the real world.1

At NMC your classroom and laboratory can be Grand Traverse Bay, the sky, the woods…or a more traditional classroom and laboratory. It might be around the block, or halfway around the world. Wherever it is, it will feature state-of-the-art equipment and world-class instruction.

Still, some things have stayed the same for more than 60 years:
• You’re going to get a great education2
• You’re going to get personal attention from outstanding faculty who care about your success3
• You’re going to be able to afford it4

Footnotes:
1. More than 50 programs of study, 10 percent new in the past five years.
2. More than 90 percent of NMC graduates and transfer students consistently report accomplishing their educational goal and say that NMC is a good value for the money.
3. Average class size is 20.
4. NMC’s in-district tuition is less than half that of a public four-year university.

Welcome to NMC.
Find it here.

“NMC’s faculty and staff take pride in seeing students achieve their goals. Whatever you’re looking for, we are dedicated to helping make sure you find it here.”

Timothy J. Nelson, President
General Education

Philosophy
General Education at Northwestern Michigan College promotes the acquisition of knowledge, skills, and attitudes needed to function effectively in a changing world. This fosters intellectual curiosity, essential to lifelong learning.

Outcomes
To ensure students experience the benefits of our philosophy of general education, the faculty of NMC commits to installing these practices throughout the curriculum.

COMMUNICATION: Students will practice effective communication with an awareness of audience and sense of purpose.

CRITICAL THINKING: Students will skillfully conceptualize, apply, analyze, synthesize, and evaluate information gathered from observation, experience, reflection, reasoning, or communication.

QUANTITATIVE REASONING: Students will accurately use numbers, symbols, measurements, properties, and the relationships of quantities to make sound decisions, judgments, and/or predictions.

Assessment
General Education outcomes are measured in several ways:
• Each year faculty members in designated courses submit selected student work to the Office of Research, Planning & Effectiveness. Faculty teams assess the level of achievement represented by the student work.
• Graduates are surveyed annually and are asked to provide their perceptions of achieving the outcomes.

The Curriculum Committee is charged with using the results of assessment to make curricular improvements.

Degrees & Certificates
NMC students may select from several educational options. Associate degrees, bachelor degrees, and certificates are awarded to those students who complete a prescribed set of courses in specific areas of study. Many programs, especially in occupational areas, also lead to additional career licenses or certifications. Maritime programs require four years of full-time study, including summer sessions, and result in a bachelor’s degree at NMC. Associate degree programs generally take two years of full-time study to complete. Certificate programs range 15-45 credits.

NMC offers the following degree and certificate options:
• Certificate of Achievement Programs
• Associate in Applied Science (AAS)
• Associate Degree in Nursing (ADN)
• Associate in General Studies (AGS)
• Associate in Science and Arts (ASA)
• Bachelor of Science in Maritime Technology (BS)

Earning a Second Associate Degree
Students may earn additional degrees at NMC. A minimum of 15 earned hours (credits) shall be earned from NMC in addition to the required credits for the previous degree.

Students seeking an additional associate degree shall be governed by the following stipulations:
• Students may earn only one Associate in Science and Arts degree
• Students may earn the Associate in General Studies degree only as their first associate degree with the exception of students who are enrolled in the AGS/Pre-ADN, AGS/Pre-Dental or AGS/Pre-Surgical Tech program
• Program requirements for the additional degree will be based on the catalog that is in effect when the student officially switches to the new program
• Previous credits will be evaluated by the Records Office for transfer to the additional degree as applicable
• This policy does not apply to certificates

Reverse Transfer
A transfer student may complete an associate’s degree concurrently with his or her pursuit of a bachelor’s degree. This process is called reverse transfer. It enables NMC students who transfer to a four-year institution before completing an associate’s degree to use coursework and credits earned at the transfer school to fulfill degree requirements at NMC.

Students enrolled at one of NMC’s Reverse Transfer partners should submit the appropriate Reverse Transfer Release form to the partner school’s Office of the Registrar. Students enrolled at non-partner schools may also reverse transfer credits. To begin the process, submit a transcript from the four-year institution to NMC. After review, NMC will inform students of their successful degree completion, or whether they have unsatisfied degree requirements remaining.

For more information, go to www.nmc.edu/student-services/advising-center/reverse-transfer.html

www.nmc.edu
Cultural Perspective/Diversity
Students will evaluate substantial connections between the world views, power structures, and experiences of multiple global cultures historically or in contemporary contexts.

In order for NMC graduates to engage as educated and informed citizens of a diverse society, students pursuing the ASA and AGS degrees are required to take one Cultural Perspective/Diversity course. Courses are listed on page 12-13, and are marked with an asterisk (*).

Certificate Requirements
Certificate Programs typically include specialty courses and may include some core education requirements. In most cases, they are designed for concentrated proficiency in specialized areas. Certificates may range from 15 to 59 credit hours as established by individual program areas and/or the Curriculum Committee. Many certificate courses may apply toward an associate degree.

Certificate Program requirements include:
1. A specified group of credit hours in an area of specialization, as determined by the appropriate NMC academic area. These three levels are possible:
   • Level I: A minimum of 15 credits in a specialty area;
   • Level II: A minimum of 30 credits in a specialty area;
   • Level III: A minimum of 45 credits in a specialty area.
2. A minimum cumulative grade point average of 2.0. Higher GPA standards may be required for specific courses within individual academic areas.
3. Level I and II certificate programs require that a minimum of 8 credit hours be completed at NMC (this may be waived in extenuating circumstances; contact the registrar). Level III certificate programs require that a minimum of 12 credit hours be completed at NMC (this may be waived in extenuating circumstances; contact the registrar).
4. Competency testing by the responsible academic area if the course work was not completed at NMC.

*Competency credit: Students with competency in a specific area should consult with their program coordinator for possible testing and/or credit.

Certificate programs are listed in the Occupational Specialty Programs section of this catalog.

General Education Certificates
NMC will give recognition to students who have completed the General Education Requirements for their program of study. Students will receive a General Studies Certificate when all general education coursework is successfully completed for the AAS degree at NMC. A Science and Arts Certificate will be granted upon successful completion of the MTA or MACRAO plus math requirements. These are considered “milestones” in the student’s program objective and are recognized as such on the academic transcript. See page 14 for MTA requirements.

Group 1 & 2 Courses
Group 1 General Education courses are designed to enhance skills and knowledge for students to succeed in academic, career and life goals. Students pursuing a two-year degree will need to fulfill specific general education requirements by selecting courses from Group 1 based on the degree requirements listed on the following pages. The Group 1 courses are listed on pages 12-13 of this catalog.

Group 2 courses are all remaining 100-level courses or above which may fulfill occupational specialty program requirements, major area requirements, and elective requirements for degree and certificate programs.

NMC. Find it here.
Degree Requirements

Associate in Science & Arts Degree (ASA)

The Associate in Science and Arts degree is generally pursued by students who are planning to transfer to a four-year college or university to complete a baccalaureate degree. Students who want to explore the curriculum also frequently pursue the ASA degree.

General Education Requirements

Minimum 30 Group 1 credits with at least a 2.0 grade for each course

**Communications**

6 credits minimum

ENG 111 and ENG 112 English Composition

**Humanities**

6 credits minimum

Two Group 1 classes from different departments: art, history, humanities, literature, music, philosophy, second-year foreign language

**Mathematics**

3 credits minimum

One Group 1 mathematics class, MTH 120 or higher

**Science**

6 credits minimum

Two Group 1 classes from different departments: astronomy, biology, chemistry, environmental science, physics. One class must include a lecture/lab

**Social Science**

6 credits minimum

Two Group 1 classes from different departments: anthropology, economics, geography, political science, psychology, sociology

<table>
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<th>Electives:</th>
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<tr>
<td>A combination of credits from Group 1 or Group 2 to equal the minimum earned credits for the degree.</td>
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| A list of courses in Group 1 and 2 begins on page 12. |

Total Degree Credits: Minimum of 60 earned semester credits

Completing the General Education Requirements of 30 credits will qualify for the Michigan Transfer Agreement (MTA). See page 14 for further information.

OTHER REQUIREMENTS

- Complete a minimum of 60 credit hours with a 2.0 or higher cumulative grade point average.
- Complete one course designated as Cultural Perspective/Diversity. Courses are listed on pages 12-13 and are marked with an asterisk (*).
- Complete a minimum 15 of the 60 credits through NMC classes.

NOTES

- A maximum of two physical education credits, two professional development seminar credits, and four Academic Service Learning Internship credits may be used toward a degree.
- Courses with numbers below 100 level do not count toward graduation but the grades do count toward your cumulative GPA. They may be prerequisites for other courses needed to complete degree or certificate requirements and may add to the total number of credits taken. Review course prerequisites carefully.
- For elective courses to count toward graduation, a course must be completed with a grade of 1.0 or higher.
# Associate in General Studies Degree (AGS)

The Associate in General Studies Degree is designed for students interested in obtaining a degree that can be customized based on varying areas of interest.

**Note:** This degree is not designed to meet the needs of the transfer student. Consult an advisor to discuss your educational goals and determine if this degree is right for you.

## Communications 6-8 credits

ENG 111 English Composition  
and either BUS 231, ENG 112, or ENG 220.

## Humanities 3 credits

3 credits of a **Group 1** Humanities course.

## Science 3-4 credits

3-4 credits of a **Group 1** Science lecture/lab course.

## Social Science 3 credits

3 credits of a **Group 1** Social Science course.

## Electives: Additional credit courses in the college curriculum for a combined total of no less than 60 earned semester hours.  
Math Competency required.*

A list of courses in **Group 1** and **2** begins on page 12.

## Total Degree Credits: Minimum of 60

### MATH COMPETENCY

*Math Competency may be fulfilled in one of two ways:

- Placement scores into MTH 111 or higher, or
- Successful completion of MTH 23 with a grade of 2.0 or higher.

### OTHER REQUIREMENTS

- Complete at least 60 credit hours with a 2.0 or higher cumulative grade point average.
- Complete one course designated as Cultural Perspective/Diversity. Courses are listed on pages 12-13 and are marked with an asterisk (*).
- Complete a minimum of 15 of the 60 credits through NMC classes.

### NOTES

- A maximum of two physical education credits, two professional development seminar credits, and four Academic Service Learning Internship credits may be used toward a degree.
- Courses with numbers below 100 level do not count toward graduation but the grades do count toward your cumulative GPA. They may be prerequisites for other courses needed to complete degree or certificate requirements and may add to the total number of credits taken. Review course prerequisites carefully.
- To count toward graduation, a course must be completed with a grade of 1.0 or higher, unless otherwise stated.
**Associate in Applied Science Degree (AAS)**

The Associate in Applied Science degree is generally pursued by those students who plan to enter the workforce following graduation from NMC. A career specialty emphasis is the dominant characteristic of the Applied Science Degree. View the list of specialty programs on pages 12-57. Although some students pursuing the AAS degree may transfer to a four-year college or university to pursue a baccalaureate degree, many AAS courses are not granted transfer equivalency credit at Michigan universities. Students considering the AAS degree who may wish to transfer should see an advisor.

### Communications 6-8 credits

ENG 111 English Composition and either ENG 220, BUS 231, or ENG 112. (Program of Study may specify.)

### Humanities 3 credits

3 credits of a Group 1 Humanities course. (Program of Study may specify.)

### Science 3-4 credits

3-4 credits of a Group 1 Science lecture/lab course. (Program of Study may specify.)

### Social Science 3 credits

3 credits of a Group 1 Social Science course. (Program of Study may specify.)

### Major Area Requirements

27 or more earned occupational specialty semester credits. See specific Programs of Study beginning on page 20.

Math Competency required.*

A list of courses in Group 1 and 2 begins on page 12.

**MATH COMPETENCY**

*Math Competency may be fulfilled in one of two ways:

- Placement scores into MTH 111 or higher, or
- Successful completion of MTH 23 with a grade of 2.0 or higher.

**OTHER REQUIREMENTS**

- Complete at least 60 credit hours with a 2.0 or higher cumulative grade point average.
- Complete a minimum of 15 of the 60 credits through NMC classes.

**NOTES**

- A maximum of two physical education credits, two professional development seminar credits, and four Academic Service Learning Internship credits may be used toward a degree.
- Courses with numbers below 100 level do not count toward graduation but the grades do count toward your cumulative GPA. They may be prerequisites for other courses needed to complete degree or certificate requirements and may add to the total number of credits taken. Review course prerequisites carefully.
- To count toward graduation, a course must be completed with a grade of 1.0 or higher, unless otherwise stated.
Associate Degree in Nursing (ADN)

The Associate Degree in Nursing program is generally pursued by those students who plan to enter the nursing workforce following graduation. After successful completion of this program, graduates take the National Council Licensure Examination (NCLEX-RN). With passing scores, graduates are awarded licensure as a Registered Nurse.

Some students pursuing the ADN degree may decide to transfer to a four-year college or university to pursue a baccalaureate degree. Students considering the ADN degree who may wish to transfer should see an advisor.

<table>
<thead>
<tr>
<th>Communications</th>
<th>6-8 credits</th>
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<tbody>
<tr>
<td>ENG 111 English Composition and ENG 112 English Composition.</td>
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<table>
<thead>
<tr>
<th>Humanities</th>
<th>3 credits</th>
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<tr>
<td>PHL 202 Contemporary Ethical Dilemmas.</td>
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<table>
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<tr>
<th>Science</th>
<th>11 credits</th>
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<table>
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<tr>
<th>Social Science</th>
<th>3 credits</th>
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<td>PSY 101 Introduction to Psychology.</td>
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**Total Degree Credits: Minimum of 68-70**

**MATH COMPETENCY**

*Math Competency may be fulfilled in one of two ways:
- Placement scores into MTH 121 or higher, or
- Successful completion of MTH 111 with a grade of 2.0 or higher.

**OTHER REQUIREMENTS**

- Complete a minimum of 68-70 credit hours with a cumulative grade point average of 2.0.
- Complete each nursing course at 2.0 or higher.
- Complete a minimum of 16 degree credits through NMC classes.

**NOTES**

- A maximum of two physical education credits, two professional development seminar credits, and four Academic Service Learning Internship credits may be used toward a degree.
- Courses with numbers below 100 level do not count toward graduation but the grades do count toward your cumulative GPA. They may be prerequisites for other courses needed to complete degree or certificate requirements and may add to the total number of credits taken. Review course prerequisites carefully.
- To count toward graduation, a course must be completed with a grade of 1.0 or higher. Grades of 2.0 or higher are required for courses with the HNR prefix, CHM 101, ENG 111 and PSY 101. Grade point average of 2.5 or higher required for each of the courses in Anatomy and Physiology sequence (BIO 227, BIO 228).
Bachelor of Science in Maritime Technology (BS)

The Bachelor of Science in Maritime Technology (BS) is for students whose goal is to pursue a select professional field of study at the baccalaureate level. The program requirements for Maritime Deck Officer, Maritime Engineering Officer, Maritime Power System and Marine Technology are listed on pages 44-47.

**General Education Requirements**

Minimum 30 Group 1 credits with at least a 2.0 grade for each course

**Communications** 6-8 credits

ENG 111 English Composition and either ENG 220 or ENG 112. (Program of Study will specify.)

**Humanities** 3 credits

3 credits of a Group 1 Humanities course. (Program of Study will specify.)

**Science** 4 credits

4 credits of a Group 1 Science lecture/lab course. (Program of Study will specify.)

**Social Science** 3 credits

3 credits of a Group 1 Social Science course. (Program of Study will specify.)

**Total Degree Credits: Minimum of 120**

**MATH COMPETENCY**

*Math Competency may be fulfilled in one of two ways:

- Placement scores into MTH 121, or higher, or
- Successful completion of MTH 111 with a grade of 2.0 or higher.

**OTHER REQUIREMENTS**

- Complete a minimum of 120 credit hours with a minimum grade of 2.0 or higher in all required courses.
- Complete one course designated as Cultural Perspective/Diversity, see program of study requirements. Courses are listed on pages 12-13 and are marked with an asterisk (*).
- Complete a minimum 30 of the 120 credits through NMC courses.
Group 1 Courses

Excess credits may be applied toward Group 2 requirements.

Communications

ENGLISH DEPT.
ENG 111  English Composition  ..................  4
ENG 112  English Composition  ..................  4

Humanities

ART DEPT.
ART 100  Art Appreciation  ..................  3
ART 111* History of Western Art I  ....  4
ART 112* History of Western Art II  ....  4
ART 213  Modern Art History  ..............  3

HISTORY DEPT.
HST 101* Western Civilization to 1500  4
HST 102* Western Civilization from 1500  4
HST 111* US History to 1865  4
HST 112* US History Since 1865  4
HST 211* Native American History  3
HST 212* African-American History  3
HST 213* American Women's History  3
HST 225  American Civil War  3
HST 228  The Vietnam War  3
HST 230  A History of Michigan  3
HST 235  20th Century Europe  3

HUMANITIES DEPT.
HUM 101* Introduction to Humanities  3
HUM 102* Introduction to Humanities  3
HUM 116* World Cultures  4

WORLD LANGUAGE (INTERMEDIATE LEVEL) DEPT.
FRN 201* Intermediate French I  4
FRN 202* Intermediate French II  4
SPN 201* Intermediate Spanish I  4
SPN 202* Intermediate Spanish II  4
SPN 227A* Spanish for Environmental Mgmt  3

Note: Not all four-year schools will accept second year World Language courses as Humanities Distribution credits.

LITERATURE DEPT.
ENG 210* Children's Literature  3
ENG 240  Introduction to Literature  3
ENG 241* Mythology  3
ENG 242* Women in Literature  3
ENG 245* Native American Literature  3
ENG 254  Shakespeare  3
ENG 256  Environmental Literature  3
ENG 261  British Literature  3
ENG 262  American Literature  3
ENG 263* World Literature  3
ENG 264  Detective Fiction  3
ENG 265  Science Fiction and Fantasy  3
ENG 266  Popular Culture  3
ENG 267  Film as Literature  3
ENG 271* Adolescence and Cultural Diversity  3

MUS 110  Music Appreciation Standard Literature  3
MUS 111  Music Appreciation Jazz  3
MUS 129  History of Rock & Roll  3
MUS 201  Theory of Music  3
MUS 202  Theory of Music  3

PHILOSOPHY/RELIGION DEPT.
PHL 101* Introduction to Philosophy  3
PHL 105* Critical Thinking  3
PHL 121* Western Religions  4
PHL 122* Eastern Religions  4
PHL 201* Ethics  3
PHL 202* Contemporary Ethical Dilemmas  3

Mathematics

MATHEMATICS DEPT.
MTH 116  Intro to Computer Science  
(does not meet MTA)  4
MTH 120  Mathematical Explorations  3
MTH 121  College Algebra  4
MTH 122  Trigonometry  3
MTH 131  Intro to Probability and Statistics  3
MTH 141  Calculus I  5
MTH 142  Calculus II  5
MTH 241  Calculus III  4
MTH 251  Differential Equations  4

Natural Science

ASTRONOMY DEPT.
AST 109 - AST 109L  Planetary Astronomy  4
AST 119 - AST 119L  Astronomy  4

BIOLOGY DEPT.
BIO 106 - BIO 106L  Human Biology  4
BIO 108 - BIO 108L  Plant Biology  4
BIO 110 - BIO 110L  Essential Biology  4
BIO 115 - BIO 115L  Cell, Plant and Ecosystem Biology  4
BIO 116 - BIO 116L  Genetic, Evolution and Animal Bio  4
BIO 208 - BIO 208L  Microbiology  4
BIO 215  Genetics (no lab)  3
BIO 227 - BIO 227L  Human Anatomy and Physiology I  4
BIO 228 - BIO 228L  Human Anatomy and Physiology II  4
BIO 250 - BIO 250L  Natural History of Vertebrates  4
BIO 255  Pathophysiology (no lab)  4
BIO 268  Biochemistry (no lab)  3

CHEMISTRY DEPT.
CHM 101 - CHM 101L  Introductory Chemistry  4
CHM 150 - CHM 150L - 150R  General Chemistry I  5
CHM 151 - CHM 151L - 151R  General Chemistry II  5
CHM 250 - CHM 250L  Organic Chemistry I  5
CHM 251 - CHM 251L  Organic Chemistry II  5

ENVIRONMENTAL SCIENCE DEPT.
ENV 103 - ENV 103L  Earth Science  4
ENV 104 - ENV 104L  Life of the Past  4
ENV 111 - ENV 111L  Physical Geology  4
ENV 112 - ENV 112L  Historical Geology  4

Natural Science (continued)
Social Science

**PHYSICS DEPT.**

PHY 105 - PHY 105L  Physics of the World Around Us......4
PHY 121 - PHY 121L  General Physics I ....................4
PHY 122 - PHY 122L  General Physics II ...................4
PHY 221 - PHY 221L - 221R  Prob & Prin of Physics I......5
PHY 222 - PHY 222L - 222R  Prob & Prin of Physics II......5

**ANTHROPOLOGY DEPT.**

ANT 113*  Introduction to Cultural Anthropology.........3

**ECONOMICS DEPT.**

ECO 201  Principles of Macroeconomics..................3
ECO 202  Principles of Microeconomics ..................3

**GEOGRAPHY DEPT.**

GEO 101*  Introduction to Geography........................3
GEO 105 - GEO 105L  Physical Geography ................4
GEO 108  Geography of U.S. and Canada ..................3
GEO 109*  World Regional Geography.......................3
GEO 115  Introduction to GIS..........................3

**POLITICAL SCIENCE DEPT.**

PLS 101*  Intro to American Politics .....................3
PLS 132*  Comparative Politics ..........................3
PLS 211*  International Relations ........................3
PLS 222  Intro to Political Theory .......................3
PLS 233*  U.S. Foreign Policy ..........................3

**PSYCHOLOGY DEPT.**

PSY 101  Introduction to Psychology ......................3
PSY 211  Developmental Psychology .......................3
PSY 212  Psychology/Exceptional Child ....................3
PSY 221  Psychology of Personality .......................3
PSY 223  Intro to Social Psychology .......................3
PSY 225  Human Sexuality ...............................3
PSY 231  Psychology of Adjustment ........................3
PSY 250  Abnormal Psychology ..........................3

**SOCIOLOGY DEPT.**

SOC 101*  Introduction to Sociology ......................3
SOC 201  Modern Social Problems ........................3
SOC 211  Marriage and the Family ........................3
SOC 220*  Gender and Society ............................3
SOC 231*  Deviance and Criminal Behavior ................3

*Cultural Perspective/Diversity

One Cultural Perspective/Diversity course is required for the ASA and AGS degrees. To meet this requirement, choose any course marked with an asterisk (*) or a 100 level French or Spanish course.

**Group 2 Courses**

All 100-level or higher courses not listed in the Group 1 section are Group 2 courses.
Course Learning Options

**Work-Based Learning**
NMC provides various work-based learning options.

**Internships**
Internship opportunities are offered for students who wish to integrate academics with professional work experience. Students can earn college credit while working in positions related to their academic and career goals. Contact the Office Manager in the academic area where you would like to pursue your internship.

**Service Learning** (For credit or non-credit)
Service Learning is a nationwide initiative to instill a sense of civic responsibility in students. It’s volunteerism with a learning twist, centered on the benefits students receive while providing services to their community and/or college. It is an opportunity for students to explore career or interest areas, apply classroom theory to a real situation, and gain practical experience for resume building. Up to four service learning elective credits can be applied to graduation. Students may also do non-credit volunteering using the same process. Information: (231) 995-2524.

**International Services**
www.nmc.edu/student-services/international-services/
(231) 995-2524
Seeking to prepare students with a foundation to create a broader understanding of the world in which we live, International Services includes:

**Global Endorsement**
NMC offers a Global Endorsement on the college transcript for students who have acquired a minimum of 100 Global Endorsement points prior to graduation. Depending on one’s degree, points may be earned in a variety of ways, but must be made up of a minimum number in each of the three following categories: academic coursework, on and off campus global experiences, and international events. Visit the International Services web page for complete details on the requirements needed to complete the endorsement.

**Study Abroad**
NMC offers short-term opportunities to multiple destinations affiliated with various academic programs. Check online for current opportunities.

**Global Events on Campus**
International Affairs Forum lectures, Dennos Museum Center concerts and exhibits and more. Current events are posted online.

**Michigan Transfer Agreement (MTA)**
In an effort to improve the transferability of college courses between Michigan public community colleges and universities, MTA took effect beginning the fall of 2014. Students who began prior to fall of 2014 will be able to complete the existing MACRAO agreement until the end of summer 2019. If a student already has the MACRAO agreement stamp on their transcript it is expected that the receiving institution will still honor it.

To fulfill the Michigan Transfer Agreement (MTA) students must successfully complete at least 30 Group 1 semester credits. Students must earn a grade of 2.0 or higher in each MTA course in order for it to count toward the minimum MTA requirements. Credits are distributed as follows:

- **English Composition:** Two courses - 6 credits.
- **Humanities:** Two Group 1 courses - 6 credits taken from two different departments excluding studio and performance classes.
- **Mathematics:** One Group 1 course – 3 credits – MTH 120 or higher.
- **Natural Sciences:** Two Group 1 courses - 6 credits from two different departments. One course must include a laboratory.
- **Social Sciences:** Two Group 1 courses - 6 credits from two different departments.

Students are required to complete at least one for-credit course at NMC before requesting the MTA Satisfied endorsement. It must be a college level course but need not be from the areas represented in the MTA. When students have completed the MTA requirements, they should notify the NMC Records Office so their transcripts will be noted “MTA SATISFIED.” Students are not required to complete an associate degree in order to satisfy the MTA.

Some students select a course of study that requires a four-year degree of which two years may be completed at NMC through completion of the Associate in Science and Arts degree (ASA). Students completing the ASA will also complete the MTA. See page 7 for ASA degree requirements. Visit www.nmc.edu/student-services/records-registration/policies/michigan-transfer-agreement for additional information.
Transfer Options

**Accounting**  
NMC Code 733  
The Accounting Program contains a blend of specialized classes and liberal arts studies to prepare students for today’s competitive, complex, and changing business world. Students who plan to pursue a bachelor’s degree should refer to NMC’s degree requirements for the Associate in Science and Arts (ASA) degree. Also, transfer students should familiarize themselves with the requirements of the school where they plan to complete their bachelor’s degree. Students interested in a bachelor’s degree may also elect to stay in Traverse City and transfer to the University Center.

**Anthropology**  
Anthropology is the study of humanity. Archaeology is the study of the material humans leave behind. Students planning to pursue degrees in anthropology or archaeology at four-year colleges or universities should take these courses. Introduction to Cultural Anthropology (ANT 113) is a required course for many areas of study.

NMC offers specialty courses in Nautical and Underwater Archaeology that may not be found at larger institutions. The Nautical Archaeology Society courses that are taught at NMC offer an internationally recognized certificate in nautical archaeology. This area of study can include fieldwork and research activities in northwestern Michigan, as well as application of advanced technologies. Students planning careers in the following field may find these courses useful: offshore oil and gas industry, underwater search and recovery (such as police divers), maritime and naval, university research, homeland security, commercial surveying, remote sensing (applied water-related technologies), cultural heritage development and management. Contact Mark Holley for more information at mholley@nmc.edu. See course descriptions beginning with ANT at www.nmc.edu/programs/course-descriptions/.

**Astronomy**  
NMC Code 717  
NMC offers courses that focus on Observational, Planetary, and Stellar Astronomy. Students planning on transferring to pursue a bachelor’s degree in this area should also take coursework in Mathematics and Physics. See course descriptions at www.nmc.edu/programs/course-descriptions/.

**Biology**  
NMC Code 702  
Individuals planning to pursue a bachelor’s degree in Biology should select from courses beginning with BIO at www.nmc.edu/programs/course-descriptions/. In addition, students should select courses in Math, Chemistry and Physics.

**Business Administration**  
NMC Code 734  
Students planning to pursue a four-year degree in Business Administration should follow NMC’s degree requirements for the ASA or AAS degree (depending on the transfer institution) AND familiarize themselves with the requirements of the school of choice for their bachelor’s degree.

**Chemistry**  
NMC Code 727  
Students planning to pursue a bachelor’s degree in Chemistry will choose coursework that includes credits selected from courses beginning with CHM at www.nmc.edu/programs/course-descriptions/. In addition to taking Chemistry courses, students with an emphasis in Chemistry gain a solid background in Math and Physics.

**Communications**  
NMC Code 704  
Communications as a separate field of study may include a variety of careers and specialties, ranging from media and public relations to technical writing. It is also an important component of other programs of study or careers, including computer science, human services, health occupations and art therapy.

**Art/Fine Arts**  
NMC Code 711  
The Fine Arts and Visual Communications courses are designed for students who plan to transfer to a four-year college or university for a Bachelor’s or Master’s degree in Fine Arts (BFA or MFA). Careers for students specializing in Fine Arts include education, museum/gallery management, commercial illustration, animation and character development, film and graphic arts.

Students specializing in Fine Arts while completing an Associate in Science and Arts degree at NMC will pursue a program of study which includes Drawing, 2-D Design and 3-D Design while offering tracks in Fine Studio Arts and Ceramics, Illustration, Photo, Animation/Character Design, Photography, Visual Communications, Painting and Art History. Students are urged to discuss course selection early with transfer schools since portfolio requirements for admission vary. See page 7 for Associate in Science and Arts degree requirements.
 program Information

**Criminal Justice**  
**NMC Code 706**

Students can complete an Associate in Science and Arts degree from Northwestern Michigan College (NMC) with a focus in Criminal Justice. Students will take 24 credits in criminal justice related courses and gain career opportunities at the local, state and national level in criminal justice; the profession is turning to college educated personnel. It is recommended that students wishing to transfer to a four-year college review the transfer requirements for the college of choice since transfer requirements might differ between institutions.

NMC and Ferris State University (FSU) have partnered to offer the Bachelor of Science degree in Criminal Justice where students complete 85 credits at NMC and 35 credits at FSU, which can be completed at the University Center in Traverse City.

NMC also offers a Criminal Justice program in collaboration with other colleges through the Michigan Colleges Online. Visit www.nmc.edu/online for current information on the status of this program, the courses, program requirements, or articulation agreements.

**Early Childhood Education**  
**NMC Code 722**

Early Childhood Education courses are designed to prepare students to work with children and their families in early care and education settings. Students may seek a career as the director of a child care program, a paraprofessional/teacher’s aide in the school system, a lead teacher in a daycare/preschool setting, a daycare teacher’s aide, or preparing for a bachelor's degree in child development. If you are pursuing elementary education, please consult the transfer guide from the transferring school or see an advisor.

**Economics**  
**NMC Code 732**

The most basic and enduring strength of economics is that it provides a logical and orderly way of analyzing contemporary economic issues. It draws upon geography, history, philosophy, and mathematics to address topics ranging from how an individual, household or firm, can make rational decisions regarding spending, saving, investment and profits to how a society can make optimal decisions regarding economic growth, inflation, unemployment, trade, and environment. As a result, economics is widely recognized as a solid background for many jobs and professions in the private and public sectors. Students interested in this field of study will select courses beginning with ECO at www.nmc.edu/programs/course-descriptions/

**Education**  
**NMC Code 708**

NMC offers an introductory course to teaching as a career and prepares student for further study in education at transfer institutions. Transfer requirements vary greatly. Go to www.nmc.edu/advising to view NMC transfer guides.

**Engineering**  
**NMC Code 709**

The NMC engineering curriculum parallels engineering programs offered during the first two years at other colleges and universities. Traditionally, these first two years emphasize the tools and theories that provide background for all engineering fields. Completion of the following program requirements will prepare students for transfer to four-year engineering programs.

Northwestern Michigan College has joined with Michigan Technological University, Kettering University, and Lake Superior State University to offer a two plus two program whereby a student attends NMC for the first two years and then completes the final two years of an engineering degree at one of the participating four-year institutions. A student admitted into the two plus two program at NMC has the added advantage of a guaranteed place in the major of their choice at one of the four year institutions.

**ENGINEERING REQUIREMENTS**  
**Credits: 69-76**

General Education credits as required for ASA Chemistry*: CHM 150 ........................................ 5
Mathematics**: MTH 141, 142, 241, and 251 ............... 18
Physics: PHY 221 and 222 .................................. 10
Engineering: EGR 101, 113, 201, 202, 203 ................. 14
Additional Requirements: EGR 131 and/or MTH 116 based on program choice ........................................... 4-9

**Note:** Use this list of courses as a guide only. It is not applicable for all engineering specialties or all schools of engineering. It is important to follow specific requirements for each engineering program available in transfer guides at www.nmc.edu/advising or in the Advising Center. Students who plan to earn an associate degree at NMC before transferring should consult an advisor for assistance in modifying this schedule.

**Engineering Certificate**  
**NMC Code 079**

**ENGINEERING REQUIREMENTS**  
**Credits: 51-56**

Chemistry: CHM 150 ........................................ 5
Mathematics: MTH 141, 142, 241, and 251 ............... 18
Physics: PHY 221 and 222 .................................. 10
Engineering: EGR 101, 113, 201, 202, 203 ................. 14
EGR 131 and/or MTH 116 based on program choice ........................................... 4-9

**English**  
**NMC Code 710**

Students wishing to concentrate their studies in the field of English may be preparing for careers in writing or teaching. English is also crucial to many other careers since writing and reading are high-demand skills in most professions. Students planning to transfer to complete a bachelor’s degree in English should pursue an Associate in Science and Arts degree program that includes credits selected from among the courses beginning with ENG at www.nmc.edu/programs/course-descriptions/
Environmental Science  

The study of Environmental Science includes courses in Geology, Biology, Meteorology, Chemistry, Soils, Oceanography and Watershed Science. Students planning on transferring to pursue a bachelor’s degree in any of these areas will choose a program of study which which includes courses selected from those beginning with ENV at www.nmc.edu/programs/course-descriptions/. Students are encouraged to contact a faculty member in the Science department to learn more about employment opportunities and for assistance with class scheduling.

Freshwater Studies

Economy and Society  

Global Freshwater Policy and Sustainability  

Science and Technology

General

Students planning to pursue a four-year degree in Freshwater Studies should follow NMC’s degree requirements for the ASA degree on page 7. Students are strongly encouraged to consult a Freshwater Studies advisor for scheduling guidelines and degree selection.

Geography  

NMC offers coursework in Physical Geography and Introduction to Geography. Regional courses are also offered that focus on the United States and Canada and the world. In addition, a tools course concentrating on Geographic Information Systems (GIS) is offered. Students planning on pursuing a rewarding career in Geography are encouraged to meet with the Geography Department Head for help in course selection. Course descriptions for GEO courses are available at www.nmc.edu/programs/course-descriptions/

Geology

NMC Code 717

Students interested in pursuing a career as a Geologist will take Environmental Studies courses, including Physical and Historical Geology. In addition, students will complete coursework in Chemistry, Physics, and Math.

History

NMC Code 730

As a separate field of study within the humanities, history will prepare students to enter secondary education, journalism, the archival and museum professions, and a variety of public history positions upon completion of at least a bachelor’s degree. It will also prepare students for entering professional and graduate schools in law and in fields that will enable graduates to teach and do research in institutions of higher learning.

Liberal Arts/Science  

NMC Code 712

Students interested in transferring to pursue a bachelor’s degree should enroll in the General Liberal Arts/Science area of study if they are undecided. Students planning on pursuing this avenue will select Group 1 courses from the course list beginning on page 12.

Mathematics

NMC Code 715

Students planning on transferring to complete a bachelor’s degree in Mathematics will pursue coursework that includes MTH 141, MTH 142, MTH 241, and MTH 251. Other suggested courses include PHY 221, PHY 222 & MTH 116.

Music

NMC Code 716

Professional opportunities for a skilled musician are endless in that music, in some way, touches our lives every day in many ways. The study of music offers a vast variety of career options including: music education, instrumental music, vocal performance, conducting, composing, music for worship, music business, instrument making and repair, music publishing, music communications, recording industry, and in the TV and radio industry.

NMC offers students the opportunity to complete the first two years of music-major coursework in a creative and supportive environment. Students receive individualized instruction from our dynamic faculty in classes designed for students’ success. Standard music-major coursework includes: Music Theory, Sight Singing and Ear Training, Group Piano Instruction, Applied Instruction (private lessons), and participation in NMC Music Ensembles. Upon successful completion of the two-year program, students will have earned an Associate in Science and the Arts degree that is transferable to most four-year institutions of higher learning.

NMC also offers many opportunities for those students pursuing non-music degree paths, but interested in continuing their participation in a music program. Any NMC student (music-major or not) may enroll for Applied Instruction and may participate in any of our NMC Music Ensembles: NMC Chamber Singers, NMC Grand Traverse Chorale, NMC Concert Band, NMC Jazz Ensemble, and the NMC Vocal Jazz Ensemble. Other opportunities (chamber groups, percussion ensembles, jazz combos, etc.) are also available for interested NMC students.

Performing Arts

DANCE

NMC Code 707

Students wishing to pursue an interest in the field of dance should take courses beginning with DNC at www.nmc.edu/programs/course-descriptions/ and consult with an advisor and the dance faculty member before their first semester at NMC.

www.nmc.edu

Find it here.
Philosophy and Religion  
**NMC Code 729**
Careers in the fields of philosophy and religion include college teaching and research, secondary education, as well as positions as ministers, priests, or rabbis. Other potential careers for those who specialize in religion are pastoral administration, religious education, church office management, and church mission work. The fields of clinical medicine and medical research as well as commercial business fields like accounting are employing ethicists, a specialized branch of philosophy.

Students seeking to transfer to a four-year college or university to major in philosophy or religion may complete basic coursework while at NMC. That coursework will include credits selected from those courses that begin with PHL at www.nmc.edu/programs/course-descriptions/.

Physical Education
Physical Education activity courses are offered to students wishing to expand personal interests, health and fitness, re-creation, and sports skills. Most physical education courses provide a starting point for students transferring to four-year institutions and who seek a physical education major or minor.

**Physics**  
**NMC Code 717**
Students planning on transferring to complete a bachelor’s degree in physics will pursue coursework which includes credits selected from those courses that begin with PHY at www.nmc.edu/programs/course-descriptions/. These students should also include Calculus I, II, & III, Differential Equations, and General Chemistry I & II.

Plant Science, Applied

- **Agricultural Operations**  
  **NMC Code 583**
- **Fruit and Vegetable Crop Management**  
  **NMC Code 581**
- **Landscape Management**  
  **NMC Code 582**
- **Viticulture**  
  **NMC Code 580**

Students interested in pursuing a four-year degree in Plant Science should follow a general education curriculum with courses in science, including Chemistry and Biology. In addition, students may take technical courses in soils, plants and plant diseases from Michigan State University at the NMC University Center. See page 53 for course requirements.

Political Science  
**NMC Code 725**
Political science as a field includes the study of American politics, comparative politics, international relations, political theory, and political economy. Undergraduate courses in political science are an important component of any liberal arts education as students gain important knowledge concerning the political structures that shape our world. Courses in political science are especially useful for students pursuing careers or advanced degrees in public policy, law, business, economics, social work, education, history, and, of course, politics. Bachelor’s and graduate degrees in political science and public policy offer career opportunities in a variety of areas such as education, policy research, law, and international business.

Students interested in political science courses select courses that begin with PLS at www.nmc.edu/programs/course-descriptions/.

**Pre-Law**  
**NMC Code 718**
Pre-law is a major often selected by students interested in pursuing careers in government or law.

**Pre-Med, Pre-Dental, Pre-Vet**  
**NMC Code 713**
The medical sciences major is designed for pre-professional students interested in graduate training in the medical field.

Psychology  
**NMC Code 724**
Students interested in the following fields of psychology, such as counseling, social work, research or teaching, may select from courses such as Introduction to Psychology, Introduction to Social Psychology, Developmental Psychology, Exceptional Child, Human Sexuality, Abnormal Psychology, Psychology of Personality and Psychology of Adjustment.

Social Work
The social work courses are designed to transfer to other four-year schools with certified social work programs. It is specifically designed to fit into the Ferris State University Social Work Program at the University Center in Traverse City and on the Ferris main campus in Big Rapids. When choosing this program of study, it is highly recommended to meet with the social work coordinator; call (231) 995-1294. This will assist you in building a program that will transfer smoothly. Social work is a rapidly growing field that employs people in many different areas of work and requires very specific training and coursework. Students interested in this field of study will select courses from among those beginning with SWK at www.nmc.edu/programs/course-descriptions/.

Sociology  
**NMC Code 720**
Sociology is the study of the social context of human behavior. It includes the study of social change; socialization of group attributes such as social class, race, gender and age; and the workings of our social institutions. Courses in sociology are an important component of any liberal arts education, especially involving critical thinking and an understanding of diversity. It is also a major study for those interested in a wide variety of careers including teaching, social work, public policy, criminal justice, law, non-profit organizations, and social research. Students interested in sociology courses select courses that begin with SOC at www.nmc.edu/programs/course-descriptions/.

World Languages  
**NMC Code 731**
World Languages as a field of study at NMC includes specialization in American Sign Language, French, and Spanish. In a world of international telecommunications and interdependent economies, language specialization is an important component for those planning careers in business, communication, or teaching.
## Course Prefixes by Academic Area

### Aviation
- AVF  Aviation Flight
- AVG  Aviation Ground

### Business
- ACC  Accounting
- BUS  Business Administration
- CIT  Computer Information Technology
- CUL  Culinary Arts
- MGT  Management
- MKT  Marketing

### Communications
- ASL  World Language - American Sign Language
- COM  Communications
- ENG  English
- FRN  World Language - French
- SPN  World Language - Spanish

### Construction Technology
- CAR  Carpenter Technology
- CMT  Construction Management
- EET  Electronic/Electronics Technology
- EGY  Renewable Energy
- ELE  Electrical Technology
- HVA  HVAC/R Technology
- PLU  Plumbing Technology

### Health Occupations
- HAH  Allied Health
- HDA  Dental Assistant
- HNR  Nursing
- HPD  Health Professional Development
- SRG  Surgical Technology

### Humanities
- ART  Art
- AUD  Audio Technology
- DNC  Dance
- HST  History
- HUM  Humanities
- MUS  Music
- PHL  Philosophy
- VCA  Visual Communications

### Maritime
- MDK  Maritime-Deck
- MNG  Maritime-Engineering
- MNS  Naval Science

### Physical Education
- HF  Health and Fitness
- OUT  Outdoor Pursuits
- PE  Physical Education

### Science and Mathematics
- AST  Astronomy
- BIO  Biology
- CHM  Chemistry
- EGR  Engineering
- ENV  Environmental Science
- MTH  Mathematics
- PHY  Physics

### Social Sciences
- ANT  Anthropology
- CD  Child Development
- CJ  Criminal Justice
- ECO  Economics
- EDU  Education
- GEO  Geography
- LWE  Law Enforcement
- PLS  Political Science
- PSY  Psychology
- SOC  Sociology
- SWK  Social Work

### Technical
- AT  Automotive
- DD  Drafting and Design
- MFG  Manufacturing Technology
- RAM  Robotics and Automation
- WPT  Welding Process Technology

### Water Studies
- WSI  Water Studies

To view course descriptions visit
www.nmc.edu/programs/course-descriptions
Occupational Programs

Occupational degrees and certificate programs prepare students to enter the workforce through development of technical specialties and related skills appropriate to the chosen occupational area. See the following program listings for specific program requirements.

Each Occupational program has specific learning outcomes that are assessed each year. Assessment methods vary from program to program. Specific outcomes are available from the academic chair. Students who would like to know how a specific academic area meets these outcomes should contact the academic chair of that area.

Accounting

Associate in Applied Science Degree NMC Code 103

This program will prepare students to begin a career in accounting. Graduates will be prepared to work as bookkeepers and entry-level accountants in accounts receivable, accounts payable, payroll, and other entry-level areas of accounting. Students considering transfer should see an advisor.

General Education Requirements Credits: 17-18
Communications: ENG 111 and either BUS 231 or ENG 112*..........................7-8
Humanities: PHL 201 or PHL 202..................3
Math competency: Placement into MTH 111 or higher, or completion of MTH 23 with a 2.0 or higher
Science: Any Group 1 course with a lab ..................4
Social Sciences: ECO 201 ........................................3

Occupational Specialty Requirements 39
ACC 121 Accounting Principles I ..................4
ACC 122 Accounting Principles II ..................4
ACC 221 Intermediate Accounting I .................4
ACC 222 Intermediate Accounting II ................4
ACC 225 Cost/Management Accounting ............3
ACC 216 Computerizing Accounting Systems ......3
BUS 101 Introduction to Business ....................3
BUS 105 Business Math** ................................3
BUS 155 Interpersonal Communications .............3
BUS 261 Business Law I ..................................3
CIT 210 Microsoft Office - Excel ......................3
CIT 216 Computerizing Accounting Systems .......2

Directed Electives (Choose any combination) 6
ACC 231 Federal Income Tax Problems .............3
ACC 241 Principles Fraud Examination .............3
ACC 290 Accounting Internship .....................3
ECO 202 Principles of Microeconomics .............3
MGT 241 Principles of Management ................3
MKT 201 Principles of Marketing ....................3
MTH 131 Intro to Probability and Statistics ........3

Credits: 62-63

Level II Certificate Requirements Credits: 31
ACC 121 Accounting Principles I ..................4
ACC 122 Accounting Principles II ..................4
ACC 225 Cost/Management Accounting ............3
ACC 199 Accounting Practicum .....................3
BUS 101 Introduction to Business ....................3
BUS 105 Business Math** ................................3
BUS 155 Interpersonal Communications .............3
BUS 231 Professional Communications .............3
CIT 210 Microsoft Office - Excel ......................3
CIT 216 Computerizing Accounting Systems .......2
PHL 105 Critical Thinking or
PHL 202 Contemporary Ethical Dilemmas ..........3

** It is recommended that BUS 105 be taken before or concurrently with ACC 121.

* Students intending to transfer to another college or university should take ENG 112.

** It is recommended that BUS 105 be taken before or concurrently with ACC 121.
Accounting Fraud Investigation

Associate in Applied Science Degree  NMC Code 773

An exclusive partnership between Northwestern Michigan College and Davenport University allows us to offer students interested in forensic accounting the ability to earn a Bachelor of Business Administration degree from Davenport University in Accounting Fraud Investigation. You will gain experience in communication, teamwork and leadership, as well as the skills necessary for criminal investigation techniques needed by the fraud examination professional. The first three years of the program are completed at NMC with the final year completed at Davenport University either online or in Traverse City at the NMC University Center.

General Education Requirements  Credits: 31-35

Communications: ENG 111 and ENG 112 8
Humanities: PHL 201 or PHL 202 and a Group I
Math competency: MTH 111 or higher, and MTH 131 6-8
Science: Any Group I course with a lab 4
Social Sciences: ECO 201 and any Group I course (SOC 231 recommended) 6-7

Occupational Specialty Requirements  Credits: 52

ACC 121 Accounting Principles I 4
ACC 122 Accounting Principles II 4
ACC 221 Intermediate Accounting I 4
ACC 222 Intermediate Accounting II 4
ACC 225 Cost/Management Accounting 3
ACC 231 Federal Income Tax Problems 3
ACC 241 Principles of Management 3
BUS 101 Introduction to Business 3
BUS 261 Business Law I 3
CIT 210 Microsoft Office - Excel 4
CIT 216 Computerizing Accounting Systems 2
CJ 211 Criminal Law 3
COM 111 Public Speaking 4
ECO 202 Principles of Microeconomics 3
MGT 241 Principles of Management 3
MKT 201 Principles of Marketing 3

Davenport University Requirements* 37

ACCT 320 Auditing and Assurance Services 3
ACCT 350 Accounting Information Systems 3
ACCT 401 Internal Auditing I 3
ACCT 421 EDP Computer Auditing 3
ACCT 495 Accounting Issues and Research 4
BUSN 489 Field Experience in Business or ACCT 490 Accounting BBA Internship 3
IAAS 221 Security Foundations 3
IAAS 332 Authentication and Audits 3
ENGL 311 Professional Writing 3
FINC 211 Corporate Finance 3
PSMG 250 Investigative Techniques and Procedures 3
SOCS 201 Diversity in Society 3
BUSN 488T BBA Major Field Test 0

* See www.davenport.edu/programs/business/bachelors-degree/accounting-fraud-investigation-bba for Davenport University course descriptions.

Program Requirements 120-124

Administrative Support Specialist

Certificate of Achievement (Level II)  NMC Code 003

Well-trained office professionals continue to be in demand and play an integral role in the successful operation of an organization. They work as a team with managers, professionals, and other support staff to control and manage administrative operations.

The Administrative Support Specialist Certificate builds on the Computer Studies-Office Applications Specialist Certificate and focuses on specific skills that area employers consider essential.

This program requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). The software may be included in course book bundles and is also at campus computer labs.

Level II Certificate Requirements  Credits: 30

Completion of all courses required for the
Office Applications Specialist Certificate (see page 29) 17
ACC 121 Accounting Principles I 4
BUS 101 Introduction to Business 3
BUS 231 Professional Communications 3
PHL 105 Critical Thinking 3

Note: Students selecting this certificate program need beginning keyboarding skills.

To apply, use the three-digit NMC Code on your admissions application.

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Audio Technology

Associate in Applied Science Degree  NMC Code 451

The NMC Audio Tech program will help prepare students for a career in the audio technology field. Careers in the audio technology field include: Sound Engineer, Recording Engineer, Sound Designer, Live and Theater Sound Engineer, Composer, Mixing Engineer, Mastering Engineer, Archivist, Audio and Visual Equipment Technician, Producer, Broadcast Technician, Pro Tools Operator, Audio Editor, and Audio Post Production.

At NMC, we believe our Audio Tech students will be better prepared for the workforce and the ever-changing music industry by combining aspects of a traditional music education, hands-on training on the newest technology, and opportunities to learn in a variety of environments and experiences – the studio, the stage, and the classroom. Students will have the opportunity to learn and work with, industry-standard hardware and software recording platforms including: Pro Logic, Studio One, and Pro Tools. Students will also have practical real-world experience in studio and live recording, sound design, composing, mixing, and mastering. The NMC Audio Tech Program is designed to be completed in four semesters. While completing coursework in the Audio Tech program, students will have the opportunity to earn platform-specific certification, professional credentials of value, and an Associate in Applied Science degree.

General Education Requirements   Credits: 17-18
Communications: ENG 111 and either  BUS 231 or ENG 112……………………………………7-8
Humanities: MUS 110 or MUS 111 …………………….3
Math competency: Placement into MTH 111 or higher, or completion of MTH 23  Science: Any Group 1 course with lab …………4
Social Sciences: Any Group 1 course ……………..3

Occupational Specialty Requirements  44
AUD 100 Applied - Audio Tech ……………………..2
AUD 101 Theory for Studio Engineers ………………2
AUD 110 Sound Recording I ………………………2
AUD 111 Sound Recording II ……………………..2
AUD 120 Digital Audio I ……………………………2
AUD 121 Digital Audio II ……………………………2
AUD 130 Live Sound I ………………………………2
AUD 131 Live Sound II ………………………………2
AUD 210 Sound Recording III ……………………..2
AUD 220 Digital Audio III ……………………………2
AUD 230 Live Sound III ……………………………2
AUD 250 Audio Tech Practicum …………………..2
AUD 260 Audio Tech Internship …………………..3
AUD 270 Audio Tech Final Project …………………3
MUS 101 Theory of Music or MUS 100A Intro to Music Theory I** …………………..3
MUS 102 Theory of Music or MUS 102A Theory of Music II** …………………..3

** Students will take a Music Theory Placement Test at the start of the semester.

Program Requirements  61-62

Audio Technology

Certificate of Achievement (Level I)  NMC Code 045

The Audio Technology field is a dynamic industry offering a variety of career opportunities. Upon successful completion of the core Audio Technology coursework, students may earn the Audio Technology Level I Certificate of Achievement.

Certificate Requirements   Credits: 16
AUD 100 Applied - Audio Tech ……………………..2
AUD 101 Theory for Studio Engineers ………………2
AUD 110 Sound Recording I ………………………2
AUD 111 Sound Recording II ……………………..2
AUD 120 Digital Audio I ……………………………2
AUD 121 Digital Audio II ……………………………2
AUD 130 Live Sound I ………………………………2
AUD 131 Live Sound II ………………………………2

Audio Technology

Certificate of Achievement (Level II)  NMC Code 046

The Audio Technology field is a dynamic industry with new technologies being introduced at a rapid pace. To stay abreast of the latest tools and trends, students may enroll in advanced Audio Technology coursework and earn the Audio Technology Level II Certificate of Achievement.

The Audio Technology Level II Certificate of Achievement builds upon the skills learned in the Level I Certificate of Achievement.

Level II Certificate Requirements  32
Prerequisites: Completion of Audio Technology Level I Certificate (16 credits)

Level I Certificate Requirements Credits: 16
AUD 210 Sound Recording III ……………………..2
AUD 220 Digital Audio III ……………………………2
AUD 230 Live Sound III ……………………………2
AUD 250 Audio Tech Practicum …………………..2
AUD 260 Audio Tech Internship …………………..3
AUD 270 Audio Tech Final Project …………………3
MUS 106 Class Piano I or MUS 112 Class Guitar I……………………………………2

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Automotive - Automotive Service Technology

**Associate in Applied Science Degree**  NMC Code 560

This program is designed for either the person with little or no prior experience or the skilled technician who needs to keep pace with current technology. Students may take the classes they need to update skills, pursue an Associate in Applied Science degree, which combines automotive technician classes with courses in the liberal arts and sciences, or work toward a Master Technician Certificate, which qualifies graduates to enter the workplace as entry-level state-certified technicians. Students may also choose from three specialized certificates: Hybrid Technology, Under Car Specialist or Electrical and Drivability Specialist. The certificates are explained in more detail in the proceeding pages. All eight state or ASE certifications must be passed to be awarded the AAS degree or Master Technician Certificate.

Day and evening classes allow technicians at every level to develop new skills at convenient times. The program is a series of modules, each designed to teach an individual system. This flexibility allows the more experienced technician to learn a specific system while the beginning technician can combine the modules for a complete course in automotive technology.

**General Education Requirements**  Credits: 17-18

Communications: ENG 111 and either BUS 231 or ENG 112 or ENG 220 .........................................................7-8

Humanities: Any Group 1 course ..................................................3

Math competency: Placement into MTH 111 or higher, or completion of MTH 23 with a 2.0 or higher

Science: Any Group 1 course with lab ........................................4

Social Sciences: Any Group 1 course ........................................3

**Occupational Specialty Requirements**  59

AT 100 Automotive Service Basics** ................................................2
AT 110 Automotive Brake Systems ..............................................5
AT 120 Automotive Electrical I** ...............................................5
AT 130 Engine Performance I ...................................................5
AT 140 Suspension and Steering ...............................................4
AT 150 Automatic Transmissions ..............................................6
AT 160 Engine Repair .............................................................6
AT 170 Heating and Air Conditioning ........................................4
AT 180 Manual Drivetrain and Axles .........................................6
AT 200 Service Department Management ................................2
AT 210 Hybrid Technology .....................................................5
AT 220 Automotive Electrical II .............................................5
AT 230 Engine Performance II .................................................4

All eight state or ASE certifications must be passed to be awarded the AAS degree or Master Technician Certificate.

*May be waived with appropriate work experience or education.

** Program Requirements  76-77

Automotive - Electrical & Drivability Specialist

**Certificate of Achievement (Level II)**  NMC Code 031

This certificate is designed to train students in the automotive systems related to the operation of the engine and its control systems. Emphasis is placed on the automotive electrical and electronic control systems. For students to be awarded this Electrical and Drivability Specialist certificate, they must pass the related State of Michigan exams or ASE test for all five of the required automotive courses.

**Foundation Requirements**

For successful completion of the AT courses, placement into ENG 111 and completion of MTH 08 or placement into MTH 23 is recommended.

**Certificate Requirements**  Credits: 32

AT 100 Automotive Service Basics** ...........................................2
AT 120 Automotive Electrical I .................................................5
AT 130 Engine Performance I ...................................................5
AT 160 Engine Repair ............................................................6
AT 220 Automotive Electrical II .............................................5
AT 230 Engine Performance II .................................................4

Elective course(s) .................................................................5

* May be waived with appropriate work experience or education.

** Program Completion Requirements**

A minimum of 32 AT credit hours are required to receive this certificate. Students must choose elective courses from the Automotive Program course list to reach the required credit level. Must pass the related State of Michigan or ASE test for all of the required automotive courses.

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**NMC. Find it here.**
Automotive - Hybrid Technology Specialist

Certificate of Achievement (Level II)  NMC Code 034

Hybrid electric vehicles are a fast-growing section of the market. This certificate is the direct result of local automotive repair companies requesting NMC provide hybrid technician training. For current students, the certificate is an additional credential opportunity that will expand employment options.

Foundation Requirements
For successful completion of the AT courses, placement into ENG 111 and completion of MTH 08 or placement into MTH 23 is recommended.

Certificate Requirements  Credits: 32-34
AT  100 Automotive Service Basics* ..................2
AT  120 Automotive Electrical I ...................5
AT  130 Engine Performance I .....................5
AT  150 Automatic Transmissions or 5
AT  230 Engine Performance II ..................4-6
AT  160 Engine Repair ..................................6
AT  210 Hybrid Technology ..........................5
AT  220 Automotive Electrical II ..................5

* May be waived with appropriate work experience or education.

Program Completion Requirements
A minimum of 32 AT credit hours are required to receive this certificate. Students must choose elective courses from the Automotive Program course list to reach the required credit level.

Must pass all eight (8) State or ASE certification tests to be awarded this certificate.

Automotive - Under Car Specialist

Certificate of Achievement (Level II)  NMC Code 032

This certificate is designed to train students in the systems underneath the automobile, including brakes, suspension, and drive train. For students to be awarded this Under Car Specialist certificate, they must pass the related State of Michigan or ASE test for all five of the required automotive courses.

Foundation Requirements
For successful completion of the AT courses, placement into ENG 111 and completion of MTH 08 or placement into MTH 23 is recommended.

Certificate Requirements  Credits: 32
AT  100 Automotive Service Basics* ..................2
AT  110 Automotive Brake Systems ................5
AT  120 Automotive Electrical I ...................5
AT  140 Suspension and Steering ..................4
AT  150 Automatic Transmissions ..................6
AT  160 Engine Repair ..................................6
AT  170 Heating and Air Conditioning ..............4
AT  180 Manual Drivetrain and Axles ..............6
AT  200 Service Department Management ..........2
AT  210 Hybrid Technology ..........................5
AT  220 Automotive Electrical II ..................5
AT  230 Engine Performance II ....................4

* May be waived with appropriate work experience or education.

Program Completion Requirements
A minimum of 32 AT credit hours are required to receive this certificate. Students must choose elective courses from the Automotive Program course list to reach the required credit level.

State and federal levels of certification are offered.

Foundation Requirements
For successful completion of the AT courses, placement into ENG 111 and completion of MTH 08 or placement into MTH 23 is recommended.

Certificate Requirements  Credits: 59
AT  100 Automotive Service Basics* ..................2
AT  110 Automotive Brake Systems ................5

* May be waived with appropriate work experience or education.

Automotive - Master Automotive Technician

Certificate of Achievement (Level III)  NMC Code 001

From bumper to bumper, under the hood to under the hoist, you'll get your hands on every part of a car in NMC’s Automotive – Master Automotive Technician program. This comprehensive certificate includes classes in brakes, electrical, engine performance and repair, suspension and steering, automatic transmissions, heating and air conditioning, manual drivetrain and axles. Classes are offered both days and evenings to fit your schedule. You'll use the latest technology and diagnostic equipment to work on real cars for real customers in NMC's 13 bay auto shop. In-house testing for state certification completes the program.

State and federal levels of certification are offered.

Foundation Requirements
For successful completion of the AT courses, placement into ENG 111 and completion of MTH 08 or placement into MTH 23 is recommended.

Certificate Requirements  Credits: 59
AT  100 Automotive Service Basics* ..................2
AT  110 Automotive Brake Systems ................5

NMC. Find it here.
Aviation

Associate in Applied Science Degree  NMC Code 562

Admission Required
A special application for Aviation is required.
Contact program advisor for details.

General Education Requirements  Credits: 17-18
Communications: ENG 111 and either ENG 112 or ENG 220 or BUS 231 ................................................ 7-8
Humans: Any Group 1 Course ........................................ 3
Math competency: Placement into MTH 111 or higher, or completion of MTH 23
Science: Any Group 1 Course with lab .................................. 4
Social Sciences: Any Group 1 course ........................................ 3

Occupational Specialty Requirements  23
AVF 111 Private Flight .................................................. 5
AVF 118 Instrument Flight I ............................................ 1
AVF 130 Instrument Flight II ........................................ 2
AVG 101 Private Ground School ...................................... 5
AVG 161 Mechanics for Pilots ........................................ 3
AVG 202 Advanced Aircraft Systems ................................ 3
AVG 252 Instrument Ground School ................................. 4

Choose at least 24 credits from the following list of courses:

   AVF 141 Introduction to UAS ........................................ 3
   AVF 230 Commercial Flight I ........................................ 2
   AVF 232 Commercial Flight II ....................................... 3
   AVF 234 Commercial Flight III ..................................... 2
   AVF 241 UAS II ......................................................... 3
   AVF 271 Multi-Engine Flight ......................................... 1
   AVF 274 Tailwheel Flight ............................................. 1
   AVF 275 Seaplane Flight .............................................. 2
   AVF 281 Advanced Cross Country Flight ......................... 2
   AVF 283 Upset Maneuver Training ................................ 1
   AVF 284 Instrument Flight Instructor ............................. 2
   AVF 285 Crew Resource Management Flight .................. 2
   AVF 382 Flight Instructor Rating ................................... 4
   AVG 190 Aviation Weather .......................................... 3
   AVG 204 Airline Aircraft Ground School ....................... 3
   AVG 210 UAS I .......................................................... 4
   AVG 231 Aviation Law ................................................ 3
   AVG 240 Corporate Aviation Ground .............................. 3
   AVG 251 Commercial Ground School ............................. 4
   AVG 285 Crew Resource Dynamics ............................... 3
   AVG 381 Instructor Ground School ............................... 5

Students seeking an AAS Degree in Aviation from NMC shall earn the required aviation credits listed for their degree or a combination of three methods:

1. Aviation courses listed in the NMC catalog;
2. Approved transfer credit;
3. NMC competency testing - maximum of 17 aviation credits may be obtained through competency testing, not including AVF 271, AVF 284, AVF 382 and AVG 381. Testing allowed only with director's approval.

To obtain the Associate in Applied Science Degree, students must complete a minimum of three flight courses listed in this catalog through the normal process for obtaining credit. All AVF and AVG courses must be completed with a 2.0 grade or higher. Please consult an aviation advisor for scheduling guidelines.

Independent study and specialty courses are also available. Examples: Airline Transport Pilot (ATP), Unmanned Systems, and Advanced Aviation topics.

Before beginning flight training, students must obtain a medical certificate from an FAA-approved doctor. Visit www.flightphysical.com or www.faa.gov for a list of FAA - approved doctors. Students must be cleared to fly by the TSA before receiving flight instruction.

Program Requirements 64-65
Business Administration
Associate in Applied Science Degree  NMC Code 105

This program prepares students for the challenges of the ever-changing world of business. Specialized courses and liberal arts studies provide students with a foundation needed to pursue careers characterized by technology, constant change, and increasing competition.

The order in which courses are taken is not critical except where prerequisites are involved. Course substitutions may be made only with the approval of the program coordinator or the academic area chair.

Students planning to pursue a four-year degree in Business Administration should follow NMC’s degree requirements for the ASA degree and familiarize themselves with the requirements of the school of choice for their bachelor’s degree. Students intending to transfer to another college should take ENG 112.

Students planning to enter the business world upon completion of a two-year degree should pursue an AAS degree in Business Administration.

General Education Requirements  Credits: 17
Communications: ENG 111 and BUS 231 ... 7
Humanities: PHL 202 or PHL 201 ... 3
Math competency: Placement into MTH 111 or higher,
or completion of MTH 23 with a 2.0 or higher
Science: Science Group 1 course with a lab ... 4
Social Sciences: ECO 201 ... 3

Occupational Specialty Requirements 38
ACC 121 Accounting Principles I ... 4
ACC 122 Accounting Principles II ... 4
BUS 101 Introduction to Business ... 3
BUS 105 Business Math ... 3
BUS 155 Interpersonal Communications ... 3
BUS 261 Business Law I ... 3
BUS 290 Business Administration Internship ... 3
CIT 100 Computers in Business-An Intro ... 3
CIT 210 Microsoft Office - Excel ... 3
MKT 241 Principles of Management ... 3
MKT 251 Human Resources Management ... 3
MKT 201 Principles of Marketing ... 3

Directed Electives (Choose any combination)
Any 5 credits from the following: 5
ACC 231 Federal Income Tax Problems ... 3
ACC 241 Principles Fraud Examination ... 3
CIT 124 Microsoft Office - PowerPoint ... 2
CIT 170 Microsoft Office - Access ... 3
CIT 213 Networking Technologies ... 4
CIT 216 Computerized Accounting Systems ... 2
CIT 233 Project Management ... 3
ECO 202 Principles of Microeconomics ... 3
ENG 112 English Composition ... 4
MKT 245 Principles of Entrepreneurship ... 3
MKT 246 Entrepreneur Marketing/Finance ... 4
MKT 208 Digital Marketing ... 2

MKT 241 Principles of Advertising ... 3
MTH 111 Intermediate Algebra* ... 4
MTH 131 Intro to Probability and Statistics ... 3
VCA 150 Digital Graphic Design I ... 3
* Or a higher level math course, excluding MTH 116.

Program Requirements 60

Business Administration - Online
Associate in Applied Science Degree  NMC Code 105

NMC offers an online alternative for students pursuing an Associate in Applied Science degree in Business Administration. Students are strongly encouraged to meet with an academic advisor because not all classes are offered online every semester, and students must complete an internship and science with lab, which require on-site attendance.

General Education Requirements  Credits: 17
Communications: ENG 111 and BUS 231 ... 7
Humanities: PHL 202 or PHL 201 ... 3
Math competency: Placement into MTH 111 or higher,
or completion of MTH 23 with a 2.0 or higher
Science: Science Group 1 course with a lab** ... 4
Social Sciences: ECO 201 ... 3

Occupational Specialty Requirements 38
ACC 121 Accounting Principles I ... 4
ACC 122 Accounting Principles II ... 4
BUS 101 Introduction to Business ... 3
BUS 105 Business Math ... 3
BUS 261 Business Law I ... 3
BUS 290 Business Administration Internship** ... 3
CIT 100 Computers in Business-An Intro ... 3
CIT 210 Microsoft Office - Excel ... 3
MKT 241 Principles of Management ... 3
MKT 251 Human Resources Management ... 3
MKT 201 Principles of Marketing ... 3

Directed Electives (Choose any combination)
Any 5 credits from the following: 5
CIT 124 Microsoft Office - PowerPoint ... 2
CIT 170 Microsoft Office - Access ... 3
CIT 216 Computerized Accounting Systems ... 2
ECO 202 Principles of Microeconomics ... 3
ENG 112 English Composition ... 4
MKT 208 Digital Marketing ... 2
MKT 241 Principles of Advertising ... 3
MTH 111 Intermediate Algebra* ... 4
MTH 131 Intro to Probability and Statistics ... 3
* Or a higher level math course, excluding MTH 116.
** Requires on-site attendance (Some Group 1 science courses are available online).

Program Requirements 60

If you are seeking online courses for your specific program that are not currently offered online, visit Michigan Colleges Online at www.micollegesonline.org for online course options.
Computer Studies -
Computer Information Technology - Developer

Associate in Applied Science Degree  NMC Code 108

As everyone and everything becomes networked, the demand for software applications continues to expand. The CIT Developer program targets this need by producing graduates who are effective programmers and solution architects. The Microsoft .NET framework is utilized to deliver practical knowledge of data access and application development. A solid understanding of good design enables students to easily transition into other development platforms such as Java. Students considering transfer should see an advisor.

General Education Requirements  Credits: 17-18
Communications: ENG 111 and either ENG 112
or ENG 220 ........................................... 7-8
Humanities: PHL 105 or PHL 202 ....................... 3
Math competency: Placement into MTH 121 or higher,
or completion of MTH 111
Science: Any Group 1 with a lab ....................... 4
(PHY 105 recommended)
Social Sciences: Any Group 1 course ................... 3
(ECO 201 recommended)

Occupational Specialty Courses  52
BUS 101 Introduction to Business ..................... 3
BUS 155 Interpersonal Communications ............... 3
CIT 110 Programming Logic and Design ............... 3
CIT 178 Relational Databases .......................... 3
CIT 180 HTML and CSS Programming ................. 3
CIT 188 Data Sources* .................................. 3
CIT 190 JavaScript Programming** .................... 3
CIT 195 .NET App and Game Programming ............ 3
CIT 208 Mobile Apps-Responsive Design ............ 3
CIT 213 Networking Technologies* ..................... 4
CIT 215 Windows Server Environment ................ 3
CIT 218 Web App Programming ASP .NET ............ 3
CIT 233 Project Management .......................... 3
CIT 255 .NET Object-Oriented Programming ......... 3
CIT 275 .NET Solutions Development ................ 3
CIT 280 Systems Analysis and Design ................ 3
CIT 290 CIT Internship*** .............................. 3

Program Requirements  69-70

* Microsoft Technology Associates Certification Exams Required
** CIW Certification Exam Required.
*** Students planning to take the internship class require department approval and are required to have a GPA of 3.0 in their CIT classes. It is also recommended that students have 20 credits in CIT classes and an overall GPA of 2.0.

While a 3.0 GPA in CIT classes is required for this internship, an alternative, campus-based internship opportunity is available for students who do not meet this requirement.

Computer Studies -
Developer I

Certificate of Achievement (Level I)  NMC Code 091

The CIT-Developer I Certificate prepares students for the workplace by concentrating on foundational level skills in web, programming and database technologies. Students in this program will have an opportunity to develop a systems portfolio as well as earn several industry recognized certifications.

Certificate Requirements  Credits: 25
CIT 110 Programming Logic and Design ............... 3
CIT 178 Relational Databases .......................... 3
CIT 180 HTML & CSS Programming .................. 3
CIT 188 Data Sources* .................................. 3
CIT 190 JavaScript Programming** .................... 3
CIT 195 .NET App and Game Programming ............ 3
CIT 210 Microsoft Office - Excel** .................... 3
CIT 213 Networking Technologies* ..................... 4

* Microsoft Technology Associate Certification Exam required.
** Microsoft Office Specialist Certification Exam required.
*** CIW Certification Exam required.

Computer Studies -
Developer III

Certificate of Achievement (Level III)  NMC Code 093

Students completing the CIT-Developer I Certificate may elect to continue their education and obtain a Level III Certificate. This program prepares students for careers as software and web developers using the latest industry technologies.

Level I Certificate Requirements  Credits: 25
Level III Certificate Requirements  Credits: 24

Total Level III Certificate Requirements  49

To apply, use the three-digit NMC Code on your admissions application.

www.nmc.edu

Find it here.
Computer Studies - Computer Information Technology-Infrastructure

Associate in Applied Science Degree  NMC Code 125

This program provides students with comprehensive background in security, computer hardware, operating systems, local area networking, and internetwork routing and switching. This degree is designed to prepare students for the following internationally recognized certifications:

- CompTIA A+® Certification
- CompTIA Network+® Certification
- CompTIA Security+® Certification
- Cisco CCNA (Cisco Certified Network Associate)
- MCP - Microsoft Certified Professional
- MTA - Microsoft Technology Associate

Successful associate degree graduates are qualified for positions as hardware technicians, network administrators, and infrastructure support specialists. Students considering transfer should see an advisor.

General Education Requirements  Credits: 17-18

Communications: ENG 111 and either ENG 112 or ENG 220 ........................................... 7-8
Humanities: PHL 105 or PHL 202................................................................. 3
Math competency: Placement into MTH 121 or higher, or completion of MTH 111
Science: Any Group 1 course with a lab ................................................. 4
Social Sciences: Any Group 1 course ................................................. 3
(ECO 201 recommended)

Occupational Specialty Courses  52

BUS 155  Interpersonal Communications .................. 3
CIT 156  CompTIA A+® Certification I .................. 3
CIT 157  CompTIA A+® Certification II .................. 3
CIT 160  Cisco Internetworking I .......................... 4
CIT 161  Cisco Internetworking II .......................... 4
CIT 213  Networking Technologies ...................... 4
CIT 215  Windows Server Environment .................. 3
CIT 233  Project Management ................................. 3
CIT 240  Network Security Management ................ 3
CIT 242  Windows Client Administration ................ 2
CIT 246  Windows Server Infrastructure .................. 3
CIT 247  Enterprise Solutions ............................... 3
CIT 256  Linux Administration .............................. 3
CIT 260  Cisco Internetworking III ....................... 4
CIT 261  Cisco Internetworking IV ....................... 4
CIT 290  CIT Internship* .................................. 3

* Students planning to take the internship class require department approval and are required to have a GPA of 3.0 in their CIT classes. It is also recommended that students have 20 credits in CIT classes and an overall GPA of 2.0.

While a 3.0 GPA in CIT classes is required for this internship, an alternative, campus-based internship opportunity is available for students who do not meet this requirement.

Program Requirements  69-70

Computer Studies - Infrastructure Specialist I

Certificate of Achievement (Level I)  NMC Code 033

The Infrastructure Specialist I Certificate of Achievement prepares computer professionals to assemble, upgrade, maintain and repair personal computers and work with Local Area Networks. The program is designed to prepare students for the following internationally recognized certifications:

- CompTIA A+® Certification
- CompTIA Network+® Certification
- MCP - Microsoft Certified Professional
- Microsoft MTA Certification

Certificate Requirements  Credits: 18

BUS 155  Interpersonal Communications .................. 3
CIT 242  Windows Client Administration ................ 2

For CompTIA A+® Certification:

CIT 156  CompTIA A+® Certification I .................. 3
CIT 157  CompTIA A+® Certification II .................. 3

For CompTIA Network+® Certification:

CIT 213  Networking Technologies ...................... 4

For Microsoft Certified Professional Certification:

CIT 215  Windows Server Environment .................. 3

Computer Studies - Infrastructure Specialist II

Certificate of Achievement (Level II)  NMC Code 030

Students completing the Infrastructure Specialist I Certificate may elect to continue their education and obtain a Level II Certificate. The Cisco CCNA certification is an industry recognized certification in internetwork routing and switching. NMC is a Cisco Networking Academy Program.

Level I Certificate Requirements  Credits: 18

Level II Certificate Requirements  16

Level II Certificate Requirements  16

CIT 160  Cisco Internetworking I ....................... 4
CIT 161  Cisco Internetworking II ....................... 4
CIT 260  Cisco Internetworking III ..................... 4
CIT 261  Cisco Internetworking IV ..................... 4

Total Level II Certificate Requirements  34
Computer Studies -
Infrastructure Specialist III

Certificate of Achievement (Level III)  NMC Code 024

After completing the Infrastructure Specialist II Certificate students may elect to obtain a level III certificate. The CompTIA Security+ certification is an industry-recognized certification focusing on computer security.

Level I Certificate Requirements  Credits: 18

Level III Certificate Requirements  16
CIT  246  Windows Server Infrastructure ..................... 3
CIT  247  Enterprise Solutions ................................. 3

For CompTIA Security+® Certification:
CIT  240  Network Security Management ..................... 3

Occupational Requirements
CIT  233  Project Management ................................. 3
CIT  256  Linux Administration ................................. 3
CIT  290  CIT Internship* .................................. 3

Total Level III Certificate Requirements  52

* Students planning to take the internship class require department approval and are required to have a GPA of 3.0 in their CIT classes. It is also recommended that students have 20 credits in CIT classes and an overall GPA of 2.0.

While a 3.0 GPA in CIT classes is required for this internship, an alternative, campus-based internship opportunity is available for students who do not meet this requirement.

Computer Studies -
Office Applications Specialist

Certificate of Achievement (Level I)  NMC Code 035

The Office Applications Specialist Certificate helps meet the demand for qualified and knowledgeable people in today’s workplace. It helps students to acquire the desktop applications expertise and basic computer skills needed to work more productively and efficiently with Microsoft Office.

This program requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). The software may be included in course book bundles and is also at campus computer labs.

This NMC credential also serves to train candidates for the globally recognized Microsoft Specialist series of certifications. NMC is a Microsoft Office approved testing center, and the certification exams are administered at the Aero Park campus. For more information: (231) 995-2247.

Certificate Requirements  Credits: 18
BUS  155  Interpersonal Communications ................... 3
CIT  119  Microsoft Office - Word ............................ 3
CIT  122A  Computer and Internet Basics I .................. 1
CIT  124  Microsoft Office - PowerPoint ..................... 2
CIT  170  Microsoft Office - Access ......................... 3
CIT  210  Microsoft Office - Excel ........................... 3
MKT  208  Digital Marketing ................................. 2

Note: Students selecting this certificate program need beginning keyboarding skills.

Computer Studies -
Computer Support Specialist

Certificate of Achievement (Level III)  NMC Code 006

Students complete course work in business and computer operations leading to a certificate. This program is designed to provide students with the necessary skills to work as support specialist or computer technician. Students will have an opportunity to acquire skills using current operating system and application software and gain experience using Local Area Networks. Students will also learn troubleshooting methodologies and develop project management skills.

This program requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). The software may be included in course book bundles and is also at campus computer labs.

Completion of Office Applications Specialist Certificate  Credits: 17

Level III Certificate Requirements  33
BUS  105  Business Math ................................. 3
BUS  231  Professional Communications ................... 3
CIT  156  CompTIA A+ Certification I ....................... 3
CIT  157  CompTIA A+ Certification II ...................... 3
CIT  213  Networking Technologies ......................... 4
CIT  215  Windows Server Environment ..................... 3
CIT  233  Project Management ............................... 3
CIT  242  Windows Client Administration ................... 2
CIT  292  Support Specialist Internship ..................... 3
ENG  220  Technical Writing ............................... 3
PHL  105  Critical Thinking ............................... 3

Total Computer Support Specialist Requirements ....... 50

Note: Students selecting this certificate program need beginning keyboarding skills.
Computer Studies - Industry Certifications

Industry Certifications

For additional information on testing and/or training for any of the certification opportunities listed below, call (231) 995-1169 or email CIT@nmc.edu. NMC is an authorized Certiport, Pearson-VUE, and Prometric testing center.

Cisco CCNA Routing & Switching Certification – The CCNA certification (Cisco Certified Network Associate) indicates a foundation in, and apprentice knowledge of networking. CCNA certified professionals can install, configure, operate LAN, WAN and dial access services for small networks (100 nodes or fewer), including but not limited to use of these protocols: IP, EIGRP, OSPF, Frame Relay, Ethernet, Access Lists.

Cisco Internetworking I through Cisco Internetworking IV are courses offered by the NMC Cisco Networking Academy and provide training for the CCNA Routing & Switching Exam.

CIW Advanced HTML5 and CSS3 Specialist – Validates technical competency in the latest HTML, CSS, and JavaScript technologies. NMC courses in HTML, CSS, and JavaScript programming provide the necessary preparation to pass the CIW Advanced HTML5 and CSS3 Specialist certification exam.

CompTIA A+ Certification® – This certification is the industry standard for validating vendor-neutral skills expected of an entry-level IT technician. CompTIA A+® Certification I and CompTIA A+® Certification II are NMC courses and provide the necessary preparation to pass the A+ Essentials and A+ Technician Certification exams.

CompTIA Network+ Certification® – This certification validates technical competency in network infrastructure and support. Those holding Network+ certification demonstrate critical knowledge of network concepts, network installation and configuration, network media and topologies, network management and network security. Network Technologies is an NMC course that provides the necessary preparation to pass the Network+ Certification exam.

CompTIA Security+ Certification® – This certification validates technical knowledge of an individual with experience in network security. The CompTIA Security+® certification validates technical competency in security and covers industry-wide topics including communication security, infrastructure security, cryptography, access control, authentication, external attack, operational and organization security. Network Security Management provides the necessary preparation to pass the Security+ Certification exam.

Microsoft Certified Professional (MCP) – The Microsoft Certified Professional certification is an internationally recognized certification focusing on Microsoft Technologies. Windows Server Environment is an NMC course that provides the necessary preparation to pass the Microsoft 70-410 certification exam.

Microsoft Office Specialist – Microsoft Office Specialist certification proves expertise in Microsoft applications. Microsoft Office-Word, Microsoft Office-Excel, Microsoft Office-PowerPoint and Microsoft Office-Access are NMC courses that provide the necessary preparation to pass Microsoft Office Specialist certifications.

Microsoft Technology Associate – Microsoft Technology Associate (MTA) certification is an entry-level credential from Microsoft that validates essential technology knowledge, enabling students to explore academic and career options, and take the first step toward building a successful career in technology. MTA certifications are embedded into the CIT Developer, and CIT Infrastructure degree programs and certificates.
Computer Studies - Web Developer I

Certificate of Achievement (Level I)  NMC Code 039

This series of Web Developer certificates provides an introduction to both website design and website development. Visual Communication courses enable students to create visually effective sites using graphic design principles and tools. Information Technology courses provide the technical ability to develop interactive, data-driven sites and applications. Students interested in this profession are usually detail and result oriented, self-directed and enjoy working with both people and technology. The certificates may be completed as stand-alone certificates, taken in order, or applied to electives or major area requirements for an Associate in General Studies or an Associate in Applied Science degree.

Level I Certificate Requirements  Credits: 21
ART  131  2-D Design ............................................3
CIT  110  Programming Logic and Design .................3
CIT  180  HTML and CSS Programming ................3
CIT  190  JavaScript Programming* ........................3
VCA  127  Digital Imaging ....................................3
VCA  147  Web Design I .......................................3
VCA  150  Digital Graphic Design I ..........................3

* CIW Certification Exam Required

Computer Studies - Web Developer II

Certificate of Achievement (Level II)  NMC Code 040

The Web Developer II Certificate is designed for students seeking entry level employment, and includes advanced web design and development skills such as data connectivity, responsive design, interactive graphics and animation.

Level I Certificate Requirements  Credits: 21

Level II Certificate Requirements  Credits: 18
BUS  155  Interpersonal Communications or
BUS  231  Professional Communications ..................3
CIT  178  Relational Databases ................................3
CIT  195  .NET App and Game Programming ............3
CIT  208  Mobile Apps-Responsive Design ...............3
VCA  125  Typography I ......................................3
VCA  146  Interactive Animation ............................3

Total Level II Certificate Requirements  39

Computer Studies - Web Developer III

Certificate of Achievement (Level III)  NMC Code 041

The Web Developer III Certificate is designed for students seeking employment requiring more advanced skills including server-side development, advanced database connectivity, and advanced animation. The certificate also includes a semester long internship experience.

Level I Certificate Requirements

Level II Certificate Requirements  Credits: 18

Level III Certificate Requirements  Credits: 21
CIT  188  Data Sources* .....................................3
CIT  218  Web APP Programming ASP .NET ............3
CIT  255  .NET Object-Oriented Programming ..........3
CIT  291  Web Developer Internship** ....................3
VCA  246  Interactive Animation II or
VCA  247  Web Design II .....................................3

Total Level III Certificate Requirements  54

* Microsoft Technology Associate Certification Exam Required
** Students planning to take the internship class require department approval and are required to have a GPA of 3.0 in their CIT classes. It is also recommended that students have 20 credits in CIT classes and an overall GPA of 2.0.

While a 3.0 GPA in CIT classes is required for this internship, an alternative, campus-based internship opportunity is available for those students who do not meet this requirement.

To apply, use the three-digit NMC Code on your admissions application.
Construction Technology - Carpenter Technology  
Certificate of Achievement (Level I)  
NMC Code 061

Skilled carpenters must knowledgeably use specialized tools; read blueprints; frame structures; install doors, windows, cabinets, insulation, and finish trim; and construct roofs, decks, and stairways. Being versatile opens a wide range of employment opportunities. The curriculum is designed by the industry and aligned with national competency standards. Students receive hands-on training in our state-of-the-art facilities. Information: (231) 995-2777.

Level I Certificate Requirements  
Credits: 19

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR 101</td>
<td>Introduction to Carpentry</td>
<td>3</td>
</tr>
<tr>
<td>CAR 103</td>
<td>Construction Blueprint Reading</td>
<td>3</td>
</tr>
<tr>
<td>CAR 105</td>
<td>Foundations and Framing</td>
<td>3</td>
</tr>
<tr>
<td>CAR 121</td>
<td>Exterior Construction</td>
<td>3</td>
</tr>
<tr>
<td>CAR 125</td>
<td>Interior Construction</td>
<td>3</td>
</tr>
<tr>
<td>CMT 107</td>
<td>Construction Supervision</td>
<td>4</td>
</tr>
</tbody>
</table>

Construction Technology - Carpenter Technology  
Certificate of Achievement (Level II)  
NMC Code 068

After completing the Carpenter Technology Level I Certificate students may elect to obtain a level II certificate. Skilled carpenters must knowledgeably use specialized tools; read blueprints; frame structures; install doors, windows, cabinets, insulation, and finish trim; and construct roofs, decks, and stairways. Being versatile opens a wide range of employment opportunities. The curriculum is designed by the industry and aligned with national competency standards. Students receive hands-on training in our state-of-the-art facilities. Information: (231) 995-2777.

Level I Certificate Requirements  
Credits: 19

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR 102</td>
<td>Introduction to Woodworking</td>
<td>3</td>
</tr>
<tr>
<td>CAR 104</td>
<td>Woodworking Applications I</td>
<td>3</td>
</tr>
<tr>
<td>CIT 100</td>
<td>Computers in Business - An Intro</td>
<td>3</td>
</tr>
<tr>
<td>CMT 207</td>
<td>Construction Cost Estimating</td>
<td>3</td>
</tr>
<tr>
<td>EGY 105</td>
<td>Sustainable Building Design</td>
<td>3</td>
</tr>
<tr>
<td>EGY 115</td>
<td>Residential Energy Efficiency</td>
<td>3</td>
</tr>
<tr>
<td>MTH 111</td>
<td>Intermediate Algebra</td>
<td>4</td>
</tr>
</tbody>
</table>

Level II Certificate Requirements  
Credits: 22

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR 104</td>
<td>Woodworking Applications II</td>
<td>3</td>
</tr>
<tr>
<td>CIT 100</td>
<td>Computers in Business - An Intro II</td>
<td>3</td>
</tr>
<tr>
<td>CMT 207</td>
<td>Construction Cost Estimating II</td>
<td>3</td>
</tr>
<tr>
<td>EGY 105</td>
<td>Sustainable Building Design II</td>
<td>3</td>
</tr>
<tr>
<td>EGY 115</td>
<td>Residential Energy Efficiency II</td>
<td>3</td>
</tr>
<tr>
<td>MTH 111</td>
<td>Intermediate Algebra II</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Level II Certificate Requirements  
Credits: 41

Construction Technology - Construction Management  
Associate in Applied Science Degree  
NMC Code 368

The Construction Management program provides graduates with the technical and managerial skills needed in today’s commercial and residential construction industry, from the planning stage with architects and engineers, to the budgeting stage with cost estimators, to the production stage with laborers. Construction managers also obtain work permits, hire contractors, troubleshoot emergencies, schedule walkthroughs and keep clients informed on work timetables and progress.

Students are prepared for the management responsibilities they will face on the job, creating an opportunity to move into supervision and construction management. Information: (231) 995-2777.

General Education Requirements  
Credits: 21

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENG 111</td>
<td>and BUS 231</td>
<td>7</td>
</tr>
<tr>
<td>PHL 202</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MTH 122</td>
<td>or completion of MTH 122 or higher,</td>
<td>4</td>
</tr>
<tr>
<td>PHY 105</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>ECO 201</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Business/Management Requirements  
Credits: 20

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIT 100</td>
<td>Computers in Business - An Intro</td>
<td>3</td>
</tr>
<tr>
<td>CMT 107</td>
<td>Construction Supervision</td>
<td>4</td>
</tr>
<tr>
<td>CMT 207</td>
<td>Construction Cost Estimating</td>
<td>3</td>
</tr>
<tr>
<td>COM 111</td>
<td>Public Speaking</td>
<td>4</td>
</tr>
<tr>
<td>MGT 241</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 201</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
</tbody>
</table>

Completion of any Construction Technology Certificate*  
Credits: 18-24

* Completion of any construction technology certificate in carpentry, electrical, facilities maintenance, HVAC/R or PLC. The HVAC/R and PLC certificates will require one additional construction technology elective.
Construction Technology - Electrical Technology

**Certificate of Achievement (Level I)**  NMC Code 062

Qualified electricians install, troubleshoot, and repair electrical systems in residential and commercial settings. There is high demand for well-trained electricians nationwide. The curriculum is designed by the industry and aligned with national competency standards. Students receive hands-on training in our state-of-the-art facilities. This certificate program is approved by the State of Michigan to meet the electrical apprenticeship requirements. Information: (231) 995-2777.

**Certificate Requirements**  Credits: 24

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELE 101</td>
<td>Introduction to Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 105</td>
<td>Beg. Residential Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 121</td>
<td>Adv. Residential Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 125</td>
<td>Pre-Commercial Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 131</td>
<td>Commercial Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 135</td>
<td>Adv. Commercial Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 142</td>
<td>Industrial Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 146</td>
<td>Adv. Industrial Electrical</td>
<td>3</td>
</tr>
</tbody>
</table>

* ELE 110 - Electrical Code Studies I and ELE 111 - Electrical Code Studies II are additional courses offered for those seeking National Electrical Code references to daily work or those who would like structured study preparation for the Journeymen or Master Electrician License Exam.

Construction Technology - Facilities Maintenance

**Certificate of Achievement (Level II)**  NMC Code 063

Performing facilities maintenance requires knowledge in several areas. This level II certificate covers reading blueprints, general carpentry, tools of the trade, electrical wiring and schematics, and thermodynamics of refrigeration. Also required will be 14 technical elective credits that can range from drafting to alternative energy integration into a facility. The curriculum is designed by the industry and aligned with national competency standards. Students receive hands-on training in our state-of-the-art facilities. Information: (231) 995-2777.

**Certificate Requirements**  Credits: 32

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR 101</td>
<td>Introduction to Carpentry</td>
<td>3</td>
</tr>
<tr>
<td>CAR 105</td>
<td>Foundations and Framing</td>
<td>3</td>
</tr>
<tr>
<td>ELE 101</td>
<td>Introduction to Electrical</td>
<td>3</td>
</tr>
<tr>
<td>ELE 105</td>
<td>Beg. Residential Electrical</td>
<td>3</td>
</tr>
<tr>
<td>HVA 101</td>
<td>Introduction to HVAC/R</td>
<td>3</td>
</tr>
<tr>
<td>HVA 106</td>
<td>Fundamentals of Heating</td>
<td>3</td>
</tr>
<tr>
<td>PLU 101</td>
<td>Introduction to Plumbing</td>
<td>3</td>
</tr>
<tr>
<td>PLU 105</td>
<td>Plumbing Components</td>
<td>3</td>
</tr>
</tbody>
</table>

Construction Technology Electives

(See Elective list on page 35) ........................................ 8

Construction Technology - HVAC/R Technology

**Certificate of Achievement (Level I)**  NMC Code 064

There is high demand for qualified technicians in the heating and cooling industry. HVAC/R technicians install, maintain, and repair heating, ventilating, air-conditioning, and refrigeration systems. Because of continuing demand, HVAC/R technicians can usually find employment with good beginning salaries. The curriculum is designed by the industry and aligned with national competency standards. Students receive hands-on training in our state-of-the-art facilities. Information: (231) 995-2777.

**Certificate Requirements**  Credits: 18

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVA 101</td>
<td>Introduction to HVAC/R</td>
<td>3</td>
</tr>
<tr>
<td>HVA 106</td>
<td>Fundamentals of Heating</td>
<td>3</td>
</tr>
<tr>
<td>HVA 122</td>
<td>Basic Refrigeration Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>HVA 126</td>
<td>Residential and Commercial A/C</td>
<td>3</td>
</tr>
<tr>
<td>HVA 132</td>
<td>Commercial A/C and Refrigeration</td>
<td>3</td>
</tr>
<tr>
<td>HVA 136</td>
<td>EPA Certification</td>
<td>3</td>
</tr>
</tbody>
</table>

Construction Technology - Programmable Logic Controllers (PLC)

**Certificate of Achievement (Level I)**  NMC Code 076

Trained personnel who design, program, operate, service and maintain these devices are performing duties that fit the job description of a programmable logic controller technician. They have the technical knowledge to set up electronic control systems for mechanical equipment, including integrating electrical wiring requirements to pneumatic and hydraulic systems. They also will learn system monitoring, debugging and troubleshooting operational problems, making repairs and performing preventive maintenance activities. There is a very high demand for trained individuals in this field as many industries have automated processes in which equipment and machines are computer-controlled. The curriculum is designed by industry experts to meet employer demands. Students receive hands-on training in our state-of-the-art science lab. For more information call (231) 995-2777.

**Certificate Requirements**  Credits: 18

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET 103</td>
<td>Electrical Studies I</td>
<td>3</td>
</tr>
<tr>
<td>EET 104</td>
<td>Electrical Studies II</td>
<td>3</td>
</tr>
<tr>
<td>EET 221</td>
<td>Industrial Controls</td>
<td>3</td>
</tr>
<tr>
<td>EET 232</td>
<td>Programmable Logic Controllers</td>
<td>3</td>
</tr>
<tr>
<td>EET 233</td>
<td>PLC Applications I</td>
<td>3</td>
</tr>
<tr>
<td>EET 234</td>
<td>PLC Applications II</td>
<td>3</td>
</tr>
</tbody>
</table>
Construction Technology - Renewable Energy Technology - Electrical
Associate in Applied Science Degree  NMC Code 655

Renewable energy is one of the most vital resources of the 21st century. NMC offers professional certificates and an Associate in Applied Science degree in this exciting, growing field. This degree focuses on how to harness wind and solar-generated electricity and its use by residential consumers and utilities. Among the NMC resources you’ll use in the program are: mobile solar lab, four wind turbines (located at the University Center and Aero Park campuses), and 8 kw, grid-interconnected solar array. Information: (231) 995-2777.

General Education Requirements  Credits: 21-22
Communications: ENG 111 and either BUS 231 or ENG 112 or ENG 220 7-8
Humanities: PHL 202 3
Math competency: Placement into MTH 122 or higher, or completion of MTH 121 3
Science: ENV 103 or ENV 117 or PHY 121 4
Social Sciences: Any Group 1 course 3

Technical Core Requirements  9
EGY 101 Principles of Renewable Energy 3
EGY 105 Sustainable Building Design 3
EGY 115 Residential Energy Efficiency 3

Electrical Track Requirements  30
EGY 141 Solar Photovoltaic Technology I 3
EGY 161 Wind Power Technology 3
ELE 101 Introduction to Electrical 3
ELE 105 Beg. Residential Electrical 3
ELE 121 Adv. Residential Electrical 3
ELE 125 Pre-Commercial Electrical 3

Construction Technology Electives
(See Elective list on page 35) 12

Program Requirements  60-61

Certificate of Achievement (Level II)  NMC Code 065

This certificate is designed for someone with introductory interest or for someone who is currently working in the electrical field and wants to enhance their job prospects. With a very narrow focus on the fundamentals of renewable energy, the specific applications as related to producing electricity, and a few electrical courses, the individual who completes this certificate will greatly enhance their job market skills. Information: (231) 995-2777.

Certificate Requirements  Credits: 31
EGY 101 Principles of Renewable Energy 3
EGY 105 Sustainable Building Design 3
EGY 115 Residential Energy Efficiency 3
EGY 141 Solar Photovoltaic Technology I 3
EGY 161 Wind Power Technology 3
ELE 101 Introduction to Electrical 3
ELE 105 Beg. Residential Electrical 3
ELE 121 Adv. Residential Electrical 3
ELE 125 Pre-Commercial Electrical 3
MTH 111 Intermediate Algebra 4

Note: ELE 110 - Electrical Code Studies I and ELE 111 - Electrical Code Studies II are additional courses offered for those seeking National Electrical Code references to daily work or those who would like structured study preparation for the Journeymen or Master Electrician License Exam.
Construction Technology - Renewable Energy Technology - HVAC/R

Associate in Applied Science Degree  NMC Code 656

Renewable Energy Technology - HVAC/R (heating, ventilation, air conditioning and refrigeration) emphasizes the use of solar and geothermal energy production in heating and cooling in residential applications. Among the NMC resources you’ll use in the program are: mobile solar lab, geothermal heat pump lab, solar thermal system and 8 kw, grid-interconnected solar array. Information: (231) 995-2777.

General Education Requirements  Credits: 21-22
Communications: ENG 111 and either BUS 231 or ENG 112 or ENG 220.................7-8
Math competency: Placement into MTH 122 or higher, or completion of MTH 121........3
Science: ENV 117 or PHY 121 or ENV 103......................4
Social Sciences: Any Group 1 course.................................3

Technical Core Requirements  15
EGY 101 Principles of Renewable Energy......................3
EGY 105 Sustainable Building Design...........................3
EGY 115 Residential Energy Efficiency..........................3
PLU 101 Introduction to Plumbing.................................3
PLU 105 Plumbing Components.................................3

HVAC Track Requirements  24
EGY 143 Solar Thermal Technology I..........................3
EGY 145 Geothermal Technology.................................3
HVA 101 Introduction to HVAC/R.................................3
HVA 106 Fundamentals of Heating...............................3
HVA 122 Basic Refrigeration Fundamentals..................3
HVA 126 Residential and Commercial A/C.....................3

Construction Technology Electives
(See Elective list in right column).................................6

Program Requirements  60-61

Construction Technology - Renewable Energy Technology - HVAC/R

Certificate of Achievement (Level II)  NMC Code 066

This certificate is designed for someone with introductory interest or for someone who is currently working in the HVAC/R career field and wants to enhance their job prospects. With a very narrow focus on the fundamentals of renewable energy, the specific applications as related to HVAC/R, and a few HVAC/R courses, the individual who completes this certificate will greatly enhance their job market skills. Information: (231) 995-2777.

Certificate Requirements  Credits: 31
EGY 101 Principles of Renewable Energy......................3
EGY 105 Sustainable Building Design...........................3

EGY 115 Residential Energy Efficiency..........................3
EGY 143 Solar Thermal Technology I..........................3
EGY 145 Geothermal Technology.................................3
HVA 101 Introduction to HVAC/R.................................3
HVA 106 Fundamentals of Heating...............................3
HVA 122 Basic Refrigeration Fundamentals..................3
HVA 126 Residential and Commercial A/C.....................3
HVA 132 Commercial A/C and Refrigeration...................3
HVA 136 EPA Certification...........................................3
PLU 101 Introduction to Plumbing.................................3
PLU 105 Plumbing Components.................................3
PLU 121 Commercial Plumbing.................................3
PLU 125 Plumbing Installation.................................3
WPT 110 Oxy-Fuel Process........................................3

* Denotes courses with required prerequisites.

www.nmc.edu  |  35
Culinary Arts
Great Lakes Culinary Institute

Associate in Applied Science Degree  NMC Code 109

The Great Lakes Culinary Institute believes in the principle of learning by doing. Extensive hands-on training will give students a competitive advantage in this highly competitive field.

This program is designed to provide rigorous and concentrated study for those students who plan careers in the rapidly-growing food service industry. The program's main emphasis is to prepare students for entry-level chef and kitchen management positions. Consideration is given to the science and techniques associated with the selection, preparation, and serving of foods to large and small groups.

The Great Lakes Culinary Institute's facility is located on NMC's Great Lakes Campus. It is comprised of five culinary labs including a bakery, introductory and food skills kitchen, an advanced cooking kitchen, a garde manger kitchen, an á la carte kitchen, and Lobdell's, a 90-seat training restaurant. Upon graduation, students will have a combination of knowledge, skills, and work experience.

The Great Lakes Culinary Institute is accredited by the American Culinary Federation. The Institute has been awarded Exemplary Program designation by the American Culinary Federation.

Note: Admission to the Culinary Arts program requires placement into MTH 08 or higher and placement into ENG 99 or higher. All culinary students are required to take CUL 100. A waiver may be obtained by documenting attendance at a career technical center with a minimum GPA of 2.5 and/or relevant industry experience. Students must submit appropriate documentation to the director of the Great Lakes Culinary Institute at least two weeks prior to the start of the semester they plan to attend.

General Education Requirements  Credits: 17-18

Communications: ENG 111 and either BUS 231 or ENG 112 .....................................................7-8

Humanities: Any Group 1 course ..........................................................3

Math competency: Placement into MTH 111 or higher, or completion of MTH 23

Science: Any Group 1 course with a lab .........................................4

Social Sciences: Any Group 1 course ...........................................3

Occupational Specialty Requirements 57

CIT 100 Computers in Business-An Intro ..................3

CUL 100 Intro to Professional Cookery ......................1

CUL 101 Today's Hospitality Industry ......................3

CUL 110 Safety and Sanitation ..................................2

CUL 111 Professional Cookery ................................6

CUL 118 Introduction to Baking ..................................4

CUL 121 Purchasing and Receiving ..........................2

CUL 190 Culinary Internship .......................................2

CUL 210 Nutrition for Culinary Arts ......................2

CUL 211 Menu Planning ............................................3

CUL 213 World Cuisine .............................................6

CUL 215 Garde Manger ..............................................4

CUL 217 Kitchen and Dining Room Mgmt ................3

CUL 218 Advanced Baking ........................................4

CUL 295 Contemporary Service & Cuisine .............12

Program Requirements 74-75

Culinary Arts
Great Lakes Culinary Institute

Certificate of Achievement (Level III)  NMC Code 029

This program is designed to provide rigorous and concentrated study for those students who plan to enter the culinary industry. GLCI Certificate students receive practical training in all aspects of commercial food preparation and presentation. The program includes laboratory courses in classical and American regional cookery, baking and, in our teaching restaurant, Lobdell's, dining room service restaurant operations. The curriculum also includes lecture courses in nutrition, sanitation, purchasing, and management. Graduates of this program are prepared to accept jobs as prep cooks and line cooks in fine restaurants, hotels, resorts and institutions. Promotions are often rapid and salaries are often high for talented and enthusiastic people. This program is articulated with the AAS degree at NMC's Great Lakes Culinary Institute. The Great Lakes Culinary Institute is accredited by the American Culinary Federation. The GLCI has been awarded Exemplary Program designation by the American Culinary Federation.

See note under AAS degree for admission requirements.

Certificate Requirements  Credits: 54

CUL 100 Intro to Professional Cookery ......................1

CUL 101 Today's Hospitality Industry ......................3

CUL 110 Safety and Sanitation ..................................2

CUL 111 Professional Cookery ................................6

CUL 118 Introduction to Baking ..................................4

CUL 121 Purchasing and Receiving ..........................2

CUL 190 Culinary Internship .......................................2

CUL 210 Nutrition for Culinary Arts ......................2

CUL 211 Menu Planning ............................................3

CUL 213 World Cuisine .............................................6

CUL 215 Garde Manger ..............................................4

CUL 217 Kitchen and Dining Room Mgmt ................3

CUL 218 Advanced Baking ........................................4

CUL 295 Contemporary Service and Cuisine .............12
Dental Assistant

**Associate in Applied Science Degree**  
**NMC Code 300**

Dental Assistants are members of a highly qualified health team whose varied duties require knowledge of the basic dental sciences, proficiency in laboratory and clinical skills, and practical experience in meeting patient needs. Both the associate and the certificate programs are accredited by the Commission on Dental Accreditation (CODA) and approved by the Michigan Board of Dentistry. Completion of the program qualifies students for the state board exam and after passing the exam, they may practice as Registered Dental Assistants. In addition, program completers are eligible for the National Certification Exam, which is recognized nationwide.

Few jobs offer the diversity and flexibility found in dental assisting. While most dental assistants work as chairside or business assistants in general or specialty dental practices such as orthodontics or oral surgery, other career paths include the following: lab technicians; sales representatives in dental supply companies; and as teachers in vocational or college dental auxiliary programs.

Enrollment in any Dental Assistant (HDA) course requires admission to the dental assistant program OR approval from the dental assistant program director.

The following are required for admission:
1. High school or college transcript 2.0 minimum GPA, or successful GED completion.
2. Mathematics: MTH 23 or placement into MTH 111 or higher.
3. Communications: Placement into ENG 111 or higher.

**General Education Requirements**  
**Credits: 20-21**

- Communications: ENG 111 and ENG 112 .......... 8
- Humanities: Any Group 1 course ..................... 3
- Math competency: Placement into MTH 111 or higher, or completion of MTH 23
- Science: BIO 106 ............................................. 4
- Social Science: PSY 101 ..................................... 3
- Group 1 Elective ........................................... 3-4

**Occupational Specialty Requirements**  
**39-40**

- BUS 155 Interpersonal Communications or 
- COM 111 Public Speaking .................................. 3-4
- HAD 120 Infection Control .................................. 2
- HDA 101 Introduction to Dentistry ................. 2
- HDA 112 Dental Materials .................................. 2
- HDA 113 Dental Materials Lab ...................... 1
- HDA 120 Dental Anatomy .................................. 3
- HDA 140 Oral Pathology/Pharmacology ............. 2
- HDA 150 Dental Office Management ................ 2
- HDA 160 Dental Emergencies ......................... 1
- HDA 170 Preventive Dentistry ......................... 2
- HDA 240 Chairside Procedures ......................... 5
- HDA 241 Chairside Procedures Lab .................. 2
- HDA 242 Dental Radiography ......................... 2
- HDA 243 Dental Radiography Lab .................... 1.5
- HDA 282 CDA/RDA Written Exam Prep ........... 2
- HDA 286 RDA Clinical Exam Prep ................... 1
- HDA 290 Dental Assistant Internship ............. 5
- HPD 110 Basic Life Support for Health Care Providers (or equivalent) ................ 0.2

**Note:** A 2.0 grade or higher is required in HDA & HAH courses.

**Minimum Program Requirements**  
**60**

**Program Information**

To apply, use the three-digit NMC Code on your admissions application.

www.nmc.edu
Dental Assistant

Certificate of Achievement [Level II]  
NMC Code 070

The following coursework must be taken in order to qualify for the Certificate of Achievement in Dental Assisting. Completion of the program qualifies students for the state board exam and after passing the exam, they may practice as Registered Dental Assistants. In addition, program completers are eligible for the National Certification exam, which is recognized nationwide. While the associate degree is not required for either of these exams, students can complete the associate degree after completion of the certificate.

Admission Requirements
Enrollment in any Dental Assistant (HDA) course requires admission to the dental assistant program OR approval from the dental assistant program director.

The following are required for admission:
1. High school or college transcript 2.0 minimum GPA, or successful GED completion.
2. Mathematics: MTH 23 or placement into MTH 111 or higher.
3. Communications: Placement into ENG 111 or higher.

Placement Requirements (to complete certificate)
Math competency: Placement into MTH 111 or higher, or completion of MTH 23.
Communications: Placement into ENG 111 or higher...

Certificate of Achievement  
Credits: 39-40

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 155</td>
<td>Interpersonal Communications or</td>
<td>3-4</td>
</tr>
<tr>
<td>COM 111</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>HAH 120</td>
<td>Infection Control</td>
<td>2</td>
</tr>
<tr>
<td>HDA 101</td>
<td>Introduction to Dentistry</td>
<td>2</td>
</tr>
<tr>
<td>HDA 112</td>
<td>Dental Materials</td>
<td>2</td>
</tr>
<tr>
<td>HDA 113</td>
<td>Dental Materials Lab</td>
<td>1</td>
</tr>
<tr>
<td>HDA 120</td>
<td>Dental Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>HDA 140</td>
<td>Oral Pathology/Pharmacology</td>
<td>2</td>
</tr>
<tr>
<td>HDA 150</td>
<td>Dental Office Management</td>
<td>2</td>
</tr>
<tr>
<td>HDA 160</td>
<td>Dental Emergencies</td>
<td>1</td>
</tr>
<tr>
<td>HDA 170</td>
<td>Preventive Dentistry</td>
<td>2</td>
</tr>
<tr>
<td>HDA 240</td>
<td>Chairside Procedures</td>
<td>5</td>
</tr>
<tr>
<td>HDA 241</td>
<td>Chairside Procedures Lab</td>
<td>2</td>
</tr>
<tr>
<td>HDA 242</td>
<td>Dental Radiography</td>
<td>2</td>
</tr>
<tr>
<td>HDA 243</td>
<td>Dental Radiography Lab</td>
<td>1.5</td>
</tr>
<tr>
<td>HDA 282</td>
<td>CDA/RDA Written Exam Prep</td>
<td>2</td>
</tr>
<tr>
<td>HDA 286</td>
<td>RDA Clinical Exam Prep</td>
<td>1</td>
</tr>
<tr>
<td>HDA 290</td>
<td>Dental Assistant Internship</td>
<td>5</td>
</tr>
<tr>
<td>HPD 110</td>
<td>Basic Life Support for Health Care Providers or equivalent</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Note: A grade of 2.0 or higher is required in HDA and HAH courses.

Early Childhood Education

Associate in Applied Science Degree  
NMC Code 321

This program prepares students for the challenges of the ever-changing world of early care and education. Specialized courses and liberal arts studies provide students with a foundation needed to pursue careers in early childhood education, childcare, and preschool education. The order in which courses are taken is not critical except where prerequisites are involved. Course substitutions may be made only with the approval of the program coordinator or the academic area chair.

Students planning to pursue a four-year degree in Child Development or Early Childhood Education should follow NMC’s degree requirements for the ASA degree and familiarize themselves with the requirements of the school of choice for their bachelor’s degree.

General Education Requirements  
Credits: 17-18

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 111</td>
<td>and either BUS 231</td>
<td>7</td>
</tr>
<tr>
<td>ENG 112</td>
<td></td>
<td>8</td>
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<tr>
<td>ENG 210</td>
<td></td>
<td>3</td>
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</tbody>
</table>

Humanities: ENG 210

Math competency: Placement into MTH 111 or higher, or completion of MTH 23

Science: Any Group 1 course with a lab...

Social Sciences: PSY 101

Occupational Specialty Requirements  
Credits: 41-42

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 101</td>
<td>Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>CD 202</td>
<td>Human Growth and Development</td>
<td>5</td>
</tr>
<tr>
<td>CD 203</td>
<td>Guiding Young Children</td>
<td>3</td>
</tr>
<tr>
<td>CD 204</td>
<td>Early Childhood Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>CD 206</td>
<td>Infant/Toddler Development</td>
<td>3</td>
</tr>
<tr>
<td>CD 220</td>
<td>Childhood Program Management</td>
<td>3</td>
</tr>
<tr>
<td>CD 230</td>
<td>Early Language and Literacy</td>
<td>3</td>
</tr>
<tr>
<td>CD 290</td>
<td>Service Learning Internship</td>
<td>3</td>
</tr>
<tr>
<td>PSY 212</td>
<td>Psychology/Exceptional Child</td>
<td>3</td>
</tr>
<tr>
<td>SOC 101</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 211</td>
<td>Marriage and the Family</td>
<td>3</td>
</tr>
<tr>
<td>General Electives</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Minimum Program Requirements  
60
**Early Childhood Education and Care**

**Certificate of Achievement (Level I)**

Infant and Toddler ........................................... NMC Code 042
Pre-School ..................................................... NMC Code 043

These certificates are designed to meet the National CDA credentialing requirements for students currently employed working with young children. These courses are approved by the National CDA (Child Development Associates Credentialing) program, which means that they meet the requirements for professional development hours in the various functional areas. Receiving NMC's Certificate of Achievement (Level I) qualifies individuals to meet the Early Childhood Lead Teacher requirements for the State of Michigan Licensing Rules for Child Care Centers.

This CDA credential sequence is designed as a building block program, which means that by adding certain additional courses, students may meet Michigan Child Care Licensing requirements for Program Manager, complete the certificate or get an AAS in Early Childhood Education.

These certificates are designed to complete the application requirements for the National CDA credentials process in the first semester and support successful completion of the National CDA credential in the second semester.

**Early Childhood Education and Care Certificate of Achievement Outcomes:**

Students completing the Early Childhood Education and Care Certificate are able to reliably demonstrate a working knowledge of child development from conception to twelve years of age; possess observational skills and tools to assess, evaluate, and build individualized plans for children; apply curriculum development knowledge to provide age appropriate/multicultural activities and materials; apply environmental design knowledge; possess working knowledge of program management and philosophy building; apply knowledge in working with families, including diverse/multicultural systems.

**Early Childhood Education for Preschool (Center Based):**

<table>
<thead>
<tr>
<th>Certificate Requirements</th>
<th>Credits: 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 101 Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>CD 202 Human Growth and Development</td>
<td>5</td>
</tr>
<tr>
<td>CD 203 Guiding Young Children or</td>
<td></td>
</tr>
<tr>
<td>CD 204 Early Childhood Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>CD 290 Service Learning Internship*</td>
<td>4</td>
</tr>
</tbody>
</table>

**Early Childhood Education for Infant & Toddler (Center Based):**

<table>
<thead>
<tr>
<th>Certificate Requirements</th>
<th>Credits: 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 101 Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>CD 202 Human Growth and Development</td>
<td>5</td>
</tr>
<tr>
<td>CD 206 Infant/Toddler Development</td>
<td>3</td>
</tr>
<tr>
<td>CD 290 Service Learning Internship*</td>
<td>4</td>
</tr>
</tbody>
</table>

*The Service Learning Internship credits are split between two semesters and meet some of the requirements for observation and demonstration for the CDA credential verification visit.

**Early Childhood Education and Care**

**Certificate of Achievement (Level II)** NMC Code 002

Receiving NMC’s Certificate of Achievement (Level II) in Early Childhood Education and Care qualifies individuals to meet the Early Childhood Program Director requirements for the State of Michigan Licensing Rules for Child Care Centers. In addition, the following classes are approved by the National Child Development Associates (CDA) Program. Students completing NMC’s Early Childhood Education and Care certificate program and the CDA credentialing process will meet qualifications for Michigan’s Licensing Rules for Early Childhood and/or School Age Care Program Director.

Students are encouraged to work closely with the Early Childhood coordinator to complete this certificate. A 2.0 GPA must be maintained to receive the certificate.

This program is designed to be a building block program. By adding certain classes, a student may complete the requirements for an associate's degree and students may transfer to a college or university to complete a bachelor's degree. Students may also elect to stay in Traverse City and transfer to the University Center.

**Early Childhood Education and Care Certificate of Achievement Outcomes:**

Students completing the Early Childhood Education and Care Certificate will be able to reliably demonstrate a working knowledge of child development from conception to twelve years of age; possess observation skills and tools to assess, evaluate, and build individualized plans for children; apply curriculum development knowledge to provide age appropriate/multi-cultural activities and materials; apply environment design knowledge; demonstrate a working understanding of special need children/families in inclusion/self-contained classrooms; possess working knowledge and skills in discipline management, development of self-esteem and prosocial behaviors; apply knowledge of program management and philosophy building; apply knowledge in working with families, including diverse/multi-cultural systems.

**Certificate Requirements Credits: 35-36**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 101 Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>CD 202 Human Growth and Development</td>
<td>5</td>
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<tr>
<td>CD 203 Guiding Young Children</td>
<td>5</td>
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<tr>
<td>CD 204 Early Childhood Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>CD 206 Infant/Toddler Development</td>
<td>3</td>
</tr>
<tr>
<td>CD 220 Childhood Program Management</td>
<td>3</td>
</tr>
<tr>
<td>CD 230 Early Language and Literacy</td>
<td>3</td>
</tr>
<tr>
<td>CD 290 Service Learning Internship*</td>
<td>2-3</td>
</tr>
<tr>
<td>ENG 111 English Composition</td>
<td>4</td>
</tr>
<tr>
<td>PSY 101 Intro to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 212 Psychology/Exceptional Child</td>
<td>3</td>
</tr>
<tr>
<td>Placement into MTH 111 or higher, or completion of MTH 23</td>
<td></td>
</tr>
</tbody>
</table>

*This internship can be split over more than one semester.*
Engineering Technology

Associate in Applied Science Degree

Computer Technology .................................................. NMC Code 545
Electronics Technology .................................................. NMC Code 557
General Technology ....................................................... NMC Code 556
Marine Technology ....................................................... NMC Code 541
Photonics Technology ..................................................... NMC Code 559
Robotics & Automation Technology ................................ NMC Code 544
Unmanned Aerial Systems Technology ............................ NMC Code 542
Unmanned Ground Vehicles Technology ............................ NMC Code 543

Engineering technology education focuses primarily on the applied aspects of science and engineering aimed at preparing graduates for practice in that portion of the technological spectrum closest to product improvement, manufacturing, construction, and engineering operational functions.

The NMC Engineering Technology degree offers students a broad based curriculum across all areas of technical education, preparing the graduates for emerging job markets and highly technical fields. The program is designed to allow students to choose courses of interest or specialize in one of the following specialty areas: Computer Technology, Electronics Technology, Photonics Technology, Robotics & Automation Technology, Unmanned Aerial Systems (UAS) Technology, Marine (ROV) Technology, Unmanned Ground Vehicles (UGV) Technology.

Note: Industry standards may require that students have First Aid/CPR certification and HAZWOPER certification.

General Education Requirements Credits: 21-22
Communications: ENG 111 and ENG 112 or ENG 220 or BUS 231 ................................................. 7-8
Humanities: PHU 105 ........................................................... 3
Math competency: Placement into MTH 122 or higher, or completion of MTH 121 .............................................. 3
Science: PHY 105 ............................................................. 4
Social Science: GEO 115 ...................................................... 3

Technical Specialty Requirements Credits: 22
CIT 110 Programming Logic & Design ................................ 3
DD 170 CADD/Computer Modeling .................................. 4
EET 102 Intro to Engineering Technology ............................ 2
EET 103 Electrical Studies I ............................................... 3
MFG 103 Manufacturing Processes .................................... 3
MFG 104 Fluid Power ......................................................... 4
RAM 120 Robotics & Automation I ..................................... 3

General Technology 16-17
Select at least 16-17 credits from any of the specializations listed below:

Computer Technology Credits: 21
CIT 178 Relational Databases ............................................. 3
CIT 180 HTML & CSS Programming .................................. 3
CIT 188 Data Sources ....................................................... 3
CIT 190 JavaScript Programming ...................................... 3
CIT 195 .NET App and Game Programming .......................... 3
CIT 233 Project Management ............................................. 3
CIT 255 .NET Object-Oriented Programming ....................... 3

Electronics Technology Credits: 19
EET 104 Electrical Studies II .............................................. 3
EET 161 Fundamentals of Light & Lasers ............................. 4
EET 221 Industrial Controls ............................................... 3
EET 232 Programmable Logic Controllers ......................... 3
EET 260 System Engineering in Practice ............................. 3
Engineering Technology Elective ...................................... 3

Marine Technology (ROV) Credits: 19
EET 104 Electrical Studies II .............................................. 3
EET 161 Fundamentals of Light & Lasers ............................. 4
EET 212 Elements of Photonics ......................................... 4
EET 221 Industrial Controls ............................................... 3
EET 260 System Engineering in Practice ............................. 3

Robotics & Automation Technology Credits: 18
EET 104 Electrical Studies II .............................................. 3
EET 221 Industrial Controls ............................................... 3
EET 232 Programmable Logic Controllers ......................... 3
EET 233 PLC Applications I .............................................. 3
EET 234 PLC Applications II ............................................. 3
EET 260 System Engineering in Practice ............................. 3

Unmanned Aerial Systems (UAS) Technology Credits: 18
AVF 141 Introduction to UAS .............................................. 3
AVF 241 UAS II ............................................................... 3
AVG 101 Private Ground School ....................................... 5
AVG 210 UAS I ............................................................... 4
EET 104 Electrical Studies II .............................................. 3

Unmanned Ground Vehicles (UGV) Technology Credits: 17
AT 130 Engine Performance I .......................................... 5
AT 220 Automotive Electrical II ........................................ 5
AT 240 Unmanned Ground Vehicles .................................. 4
EET 260 System Engineering in Practice ............................. 3

Please consult an NMC Engineering Technology program advisor for scheduling guidelines.

Note: Internship opportunities are available for additional credits.

Minimum Program Requirements 60

NMC. Find it here.
Entrepreneurship Certificate
Certificate of Achievement (Level I)  NMC Code 051

The Entrepreneurship certificates help students manage and market a business and take an entrepreneurial perspective of business management. They offer an entrepreneur tool set of business knowledge and practices needed for competing in today’s global marketplace. These certificate courses also apply to the course requirements for the Business Administration AAS degree.

Certificate Requirements  Credits: 16
ACC 121  Accounting Principles I .........................4
BUS 101  Introduction to Business ........................3
BUS 105  Business Math ....................................3
MGT 245  Principles of Entrepreneurship ................3
MKT 201  Principles of Marketing ..........................3

Entrepreneurship Certificate
Certificate of Achievement (Level II)  NMC Code 052

After completing the Entrepreneurship Certificate Level I students may elect to obtain an Entrepreneurship Certificate Level II. The additional classes required for the Level II Certificate provide an entrepreneur with additional tools needed to compete in today’s global marketplace. These certificate courses also apply to the course requirements for the Business Administration AAS degree.

Level I Certificate Requirements  Credits: 16
Level II Certificate Requirements  Credits: 11

Required Elective  Choose from the following:  3-4
CIT 233  Project Management ..............................3
MGT 241  Principles of Management ......................3
MGT 246  Entrepreneur Marketing/Finance ...............4
MGT 251  Human Resource Management ................3
MKT 208  Digital Marketing ..............................2

Total Credits for Level II  30-31
Freshwater Studies
Associate in Applied Science Degree

Economy and Society ........................................... NMC Code 492
Global Freshwater Policy and Sustainability ... NMC Code 491
Science and Technology ...................................... NMC Code 493

The Freshwater Studies program is offered by NMC’s Great Lakes Water Studies Institute. The program is designed to prepare students for both current and emerging career pathways in water related fields. Students have a choice of 4 general streams or emphasis areas: Global Freshwater Policy and Sustainability, Economy and Society, Science and Technology and General. The Freshwater Studies degree program combines unique courses and opportunities for field experiences available through Northwestern Michigan College and our University partners. In addition to the partners in the Great Lakes region, our program has collaborators in selected sites overseas. This freshwater focused program has an interdisciplinary approach designed to offer students the ability to gain unique competencies and credentials of value. The core program of study includes Introduction to Freshwater Studies, Watershed Science, Geographic Information Systems (GIS), Oceanography, Meteorology and Climatology, Water Policy and Sustainability, and an Internship experience either locally or overseas. The degree is intended both for students who plan to enter professional fields as well as those who wish to further their studies and complete a bachelor’s degree with university partners located in Traverse City and offsite.

General Education Requirements Credits: 17-18
Communications: ENG 111 and either BUS 231 or ENG 112 or ENG 220........................................... 7-8
Humanities: PHL 105 or PHL 202................................. 3
Math competency: Placement into MTH 111 or higher,
or completion of MTH 23
Science: ENV 117...................................................... 4
Social Sciences: GEO 115............................................ 3

Core Requirements** 17
ENV 131 Oceanography......................................... 4
ENV 140 Watershed Science.................................... 4
WSI 105 Introduction to Freshwater Studies................ 3
WSI 230 Water Policy and Sustainability .................... 3
WSI 290 Freshwater Studies Internship....................... 3

Areas of Concentration:**

Economy and Society
BIO 110 Essential Biology .................................... 4
BUS 101 Introduction to Business ............................ 3
ECO 201 Principles of Macroeconomics .................... 3
MGT 241 Principles of Management ........................ 3
MGT 245 Principles of Entrepreneurship.................. 3
MTH 131 Intro to Probability and Statistics ............... 3

Global Freshwater Policy and Sustainability
BIO 110 Essential Biology .................................... 4
GEO 109 World Regional Geography ....................... 3
MTH 131 Intro to Probability and Statistics ............... 3
SPN 202 Intermediate Spanish II or
SPN 227A Spanish for Environmental Mgmt............. 3-4

Science and Technology
BIO 115 Cell, Plant & Ecosystem Biology or
CHM 150 General Chemistry I or
PHY 121 General Physics I ..................................... 4-5
MTH 141 Calculus I ............................................. 5

General
ANT 113 Intro to Cultural Anthropology ................. 3
BIO 115 Cell, Plant & Ecosystem Biology or
BIO 116 Genetic, Evolution, Animal Biology ........... 4
CHM 150 General Chemistry I .............................. 4
ECO 202 Principles of Microeconomics ................. 3
MTH 121 College Algebra ................................... 3
MTH 131 Intro to Probability and Statistics ............. 3
ASL 101 American Sign Language I and
ASL 102 American Sign Language II or
FRN 101 Elementary French I and
FRN 102 Elementary French II or
SPN 101 Elementary Spanish I and
SPN 102 Elementary Spanish II ............................. 8

** Core and Concentration credits can also be applied to General Education requirements.

Please consult an NMC Freshwater Studies program advisor for scheduling guidelines.

Minimum Program Requirements 60
Law Enforcement

Associate in Applied Science Degree  NMC Code 352

Graduates of this program are eligible to take the state law enforcement officer examination. Students who anticipate transferring to a four-year college or university need to see an NMC advisor during their first semester, as some courses may be acceptable for transfer credit. Students may enroll in the Law Enforcement Preservice Police Academy upon completing first year requirements or with a college degree. Completion of the Police Academy (LWE courses) must occur within two semesters, beginning fall semester and completed the following spring semester. A minimum grade of 2.0 must be achieved in each LWE course, satisfying prerequisites for licensing and qualifying the student to take the state examination to be hired by a law enforcement agency, which activates the license. The Police Academy is approved and regulated by the Michigan Commission on Law Enforcement Standards (MCOLES).

It is mandatory that students meet with the Law Enforcement Coordinator prior to beginning LWE courses to register with MCOLES. Students must pass MCOLES reading/writing and physical agility tests prior to starting the LWE courses. Visit www.michigan.gov/mcoles for online registration or call (231) 995-1283 with questions.

General Education Requirements  Credits: 18

Communications: ENG 111 and ENG 112 ...................... 8
Humanities: PHL 201 or PHL 202 ......................... 3
Math competency: Placement into MTH 111 or higher, or completion of MTH 23
Science: Any Group 1 course with lab ....................... 4
Social Sciences: PLS 101 or PLS 132 ....................... 3

Core Requirements  13

CJ 101 Introduction to Criminal Justice ................... 4
PSY 101 Introduction to Psychology ....................... 3
PSY 250 Abnormal Psychology or ........................ 3
SOC 231 Deviance and Criminal Behavior .................. 3
SOC 101 Introduction to Sociology .......................... 3

Occupational Specialty Requirements  39

HAH 200 Emergency Assessment and Intervention ... 3
LWE 102 Police Operations .................................. 4
LWE 210 Cultural Awareness/Diversity ..................... 2
LWE 212 Criminal Investigation ............................. 3
LWE 214 Firearms ............................................. 4
LWE 215 Defensive Driving .................................. 3
LWE 216 Traffic Enforcement and Investigation ........ 3
LWE 218 Physical Training/Wellness ....................... 4
LWE 225 Defensive Tactics .................................. 4
LWE 226 Michigan Criminal Law ........................... 3
LWE 227 Criminal Procedures ............................... 3
LWE 228 Speed Measurement/PBT .......................... 3

Recommended Course:
LWE 195* Police Practicum .................................... 4
*Recommended for students with no police field experience.

Law Enforcement

Certificate of Achievement (Level II)  NMC Code 049

The following coursework may be taken in order to qualify for the Certificate of Achievement in Law Enforcement. Completion of the program qualifies students for the Michigan Commission on Law Enforcement Standards (MCOLES), State of Michigan Post-test exam and after passing the exam students are certifiable to work as Police Officers throughout the State of Michigan as well as other States in the United States with reciprocity agreements. An Associate degree is required to qualify to take the MCOLES licensing exam.

ADMISSION REQUIREMENTS

Enrollment in the Law Enforcement Certificate program requires approval of the NMC Law Enforcement Director and MCOLES.

The following are required for admission:
- A minimum of an Associate Degree from an accredited College or Completion of an Associate degree at the Completion of the required courses*
- Must be a U.S. Citizen
- Must be at least 18 years of age
- Have never been convicted of a Felony (Including Expunged Records)
- Vision must be correctable to 20/20 in both eyes
- Must have normal color vision
- Must have a valid driver's license
- Must pass a pre-service physical Fitness test
- Must pass a Reading/Writing Exam
- Must pass a Physical Exam
- Must pass a Psychological Exam

*Admission is contingent on a one-on-one interview with MCOLES representatives, NMC Law Enforcement Director, and a college degree audit.

Certificate of Achievement  Credits: 39

LWE 102 Police Operations .................................. 4
LWE 210 Cultural Awareness/Diversity ..................... 2
LWE 214 Firearms ............................................. 4
LWE 218 Physical Training/Wellness ....................... 4
LWE 226 Michigan Criminal Law ........................... 3
HAH 200 Emergency Assessment & Intervention ....... 3
LWE 212 Criminal Investigation ............................. 3
LWE 215 Defensive Driving .................................. 3
LWE 216 Traffic Enforcement ................................. 3
LWE 225 Defensive Tactics .................................. 4
LWE 227 Criminal Procedure ................................ 3
LWE 228 Speed Measurement / PBT ........................ 3

Note: A 2.0 grade or higher is required in LWE Courses.

NMC. Find it here.
Manufacturing Technology

**Associate in Applied Science Degree**  
NMC Code 584

The Manufacturing Technology program is designed to provide a multi-disciplined technical background in fields for which NMC does not offer a specific program. For instance, students interested in pursuing careers in advanced manufacturing or welding may enroll in the Manufacturing Technology program and design a model schedule that emphasizes their major area of interest. The program has the flexibility to match the student's interest with the skills necessary for job entry.

Students, with assistance from an advisor, will select a major area of technical emphasis. These technical courses plus supporting courses from other disciplines comprise the Manufacturing Technology program requirements.

Each student’s proposed Manufacturing Technology program must be approved by a committee consisting of the appropriate department head, the academic chair, and the registrar.

**General Education Requirements**  
Credits: 17-18

| Communications: ENG 111 and either BUS 231 or ENG 112* or ENG 220 | 7-8 |
| Humanities: Any Group 1 course | 7-8 |
| Math competency: Placement into MTH 111 or higher, or completion of MTH 23 | 3 |
| Science: Any Group 1 course with a lab | 4 |
| Social Sciences: Any Group 1 course | 3 |

*Students intending to transfer to another college or university should take ENG 112.

**Occupational Specialty Requirements**  
Credits: 39

**Electives**  
4-9

Choose any courses from Group 1 and/or Group 2.

**Program Requirements**  
60-65

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Marine Technology

**Bachelor of Science in Marine Technology**  
NMC Code 870

The Marine Technology major at NMC prepares students to meet the needs of the global marine industry. Graduates will be in high demand for global employment opportunities in extremely diverse and fast-growing industries. This four-year bachelor’s program builds on NMC’s Marine Technology concentration of the Engineering Technology program. Technical training will occur at numerous campus labs, NMC’s Great Lakes campus harbor and aboard research vessels operating throughout the Great Lakes. Program emphasis is focused on project management, technical competencies and hands-on learning with students having direct access to remotely operated vehicles, multiple SONAR platforms, marine instrumentation and marine data processing software. Instruction will be provided by highly trained instructors with experience in the industry.

**Note:** Students must also complete First Aid/CPR certification and HAZWOPER certification.

**General Education Requirements**  
Credits: 42

| Communications: ENG 111 and ENG 220 | 7 |
| Humanities: PHL 105 and PHL 202 | 6 |
| Math competency: MTH 121, MTH 122, MTH 131 and MTH 141 | 15 |
| Science: PHY 121 and PHY 122 | 8 |
| Social Science: ECO 202 and GEO 115 | 6 |

**Marine Technology Requirements**  
Credits: 78

| CIT 110 Programming Logic & Design | 3 |
| DD 170 CADD/Computer Modeling | 4 |
| EET 102 Intro to Engineering Technology | 2 |
| EET 103 Electrical Studies I | 3 |
| EET 104 Electrical Studies II | 3 |
| EET 304 Marine Electronics | 3 |
| ENV 117 Meteorology & Climatology | 4 |
| ENV 131 Oceanography | 4 |
| MFG 103 Manufacturing Processes | 3 |
| MFG 104 Fluid Power | 4 |
| MFG 304 Marine Hydraulics | 4 |
| RAM 120 Robotics & Automation I | 3 |
| WSI 200 GL Research Technologies | 3 |
| WSI 210 Underwater Acoustics and Sonar | 3 |
| WSI 215 Marine GIS & Data Processing | 3 |
| WSI 240 ROV Systems and Operations | 3 |
| WSI 300 Remote Sensing and Sensors | 3 |
| WSI 310 Sonar Systems and Operations | 4 |
| WSI 315 Advanced Marine Survey & Data | 3 |
| WSI 390 Internship | 3 |
| WSI 400 Marine Technology Capstone | 4 |
| WSI 405 Marine Industry | 3 |
| WSI 433 Marine Project Management | 3 |
| WSI 440 AUV Systems & Operations | 3 |

**Program Requirements**  
120
Maritime
Great Lakes Maritime Academy
Bachelor of Science in Maritime Technology
NMC Code 850 / 851

The Great Lakes Maritime Academy is more than just a college experience. As Michigan’s State Maritime Academy, our college educates and trains the finest Deck and Engineering Officers available to the commercial shipping industry.

As you learn more about us, you will discover a professional environment based on pride and tradition. The Academy prepares future merchant marine officers/business professionals for the challenge of operating ships of unlimited tonnage. Our training ship, State of Michigan, is utilized daily as a floating classroom and hands-on learning environment. We set sail with our ship at various times throughout the academic year to reinforce the skills taught shoreside. As cadets progress through the Academy, they learn our industry first hand by completing essential sea time aboard the training ship and commercial vessels of the Great Lakes and oceans.

Cadets earn their maritime credentials and a bachelor’s degree. We offer a condensed core maritime curriculum for those who enter with a bachelor’s degree. Cadets are prepared to write the U.S. Coast Guard examination for licensing as Third Mate Great Lakes and Oceans Unlimited Tonnage and First Class Great Lakes Pilot (Deck Officer), or Third Assistant Engineer, Steam and Motor Vessels of any Horsepower (Engineering Officer). Graduates are fully compliant with Standards of Training, Certification and Watchkeeping (STCW).

Great Lakes Maritime Academy is proud of the quality education and training we have provided since 1969. Curricula range from seamanship, navigation and piloting to steam and diesel engineering together with up to 300 days of sea time. Our alumni sail with the fleets of the Great Lakes and oceans with many having reached the pinnacle of their professions as a Captain or Chief Engineer. With exceptional employment and salaries upon graduation, the time is now to consider a career as a professional mariner. The Admissions Office is open weekdays from 8:00 am to 5:00 pm. Please visit www.nmc.edu/maritime for additional information.

This program is approved by the U.S. Maritime Administration, the U.S. Coast Guard, and the Michigan Department of Education. A new class begins each year in mid August (Pre-Fall semester).

In addition to the above, the Maritime Academy offers a Bachelor of Science in Maritime Technology - Power Systems program (see page 47).

ADMISSION REQUIREMENTS
Admission to the Great Lakes Maritime Academy requires candidates meet the following:
1. Minimum age 17, with high school diploma or GED.
2. United States Citizen.
3. Academic placement at freshman English and Intermediate Algebra level determined by minimum composite ACT score of 20, SAT score of 1440, transferrable college credits or COMPASS placement testing.
4. No misdemeanors, felonies or legal expungements.

Acceptance to the Great Lakes Maritime Academy is competitive, with the incoming class of 60 cadets beginning in the fall of each year. Admissions decisions are made without regard to age, sex, marital status, national origin, or ethical/racial background. Applicants may apply at www.nmc.edu/maritime to submit online application. An application checklist is provided. If you have questions, please call the Maritime Admissions Office at (231) 995-1213 or (231) 995-1209.

GENERAL PROGRAM REQUIREMENTS
In addition to NMC rules and regulations, Maritime cadets must comply with the rules and regulations specified under the “Maritime Cadet Rules and Regulations.”
DEPARTMENT OF NAVAL SCIENCE

The Department of Naval Science is staffed by an active duty Naval officer. The Department offers training designed to acquaint the cadet with the mutual dependence of the Navy and the Merchant Marine in accomplishing their common objectives through the MNS 100 course. Additionally, Strategic Sealift Officer Program (SSOP) Midshipmen will receive Navy professional development training through the MNS 200 and MNS 250 courses. Upon completion of the SSOP, graduates will be commissioned as an Ensign in the United States Navy Reserve.

GRADUATION REQUIREMENTS

In addition to NMC graduation requirements, Maritime Academy cadets must:

1. Successfully complete all components of the program.
2. Pass the U.S. Coast Guard license exam (not applicable to Power Systems Program).
3. Achieve a 2.0 (76%) grade or higher in all courses.
4. Deck cadets must complete Great Lakes pilotage exams as per the Academy’s Rules and Regulations.

CURRICULUM

NMC’s Great Lakes Maritime Academy offers three bachelor degree programs of study:

• Bachelor of Science - Maritime Technology: Deck Officer
• Bachelor of Science - Maritime Technology: Engineering Officer
• Bachelor of Science - Maritime Technology: Power Systems

Each program provides the cadet with coursework in math, physical science, humanities, and social studies in addition to the maritime curriculum.

Federal regulations require that each cadet obtain up to 300 sailing days of practical training as a cadet observer aboard ship. Sea time is arranged by the Academy and spread over the program. In addition to shipboard duties, the cadets are required to complete written assignments, sea projects, for evaluation and grading. Great Lakes Maritime reserves the right to revise the program in accord with industry needs and government agency requirements (not applicable to Power Systems program).

The following program requirements are for a high school graduate or a person without transfer credits from another institution. A condensed maritime curriculum for students with a bachelor’s degree is available.

Maritime - Deck Officer

Great Lakes Maritime Academy

Bachelor of Science in Maritime Technology

NMC Code 850

General Education Requirements

Credits: 35

Communications: ENG 111 and ENG 112 ......................... 8
Humanities: PHL 202 and one additional
Group 1 Humanities course ......................................... 6
Math competency: Placement into MTH 141 or higher, or completion of MTH 121 and MTH 122 .................. 7
Science: ENV 117 and PHY 105 ................................. 8
Social Science: ECO 201 and ECO 202 ...................... 6

Maritime Requirements 82

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MDK 100</td>
<td>Survival at Sea</td>
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<tr>
<td>MDK 104</td>
<td>Rigging and Ship Maintenance Lab</td>
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<tr>
<td>MDK 106</td>
<td>Watchstanding I</td>
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<tr>
<td>MDK 112</td>
<td>Rules of the Nautical Road</td>
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<tr>
<td>MDK 121</td>
<td>Navigation I</td>
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<tr>
<td>MDK 122</td>
<td>Navigation I Lab</td>
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<tr>
<td>MDK 149</td>
<td>Damage Control &amp; Safety</td>
<td>2</td>
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<tr>
<td>MDK 200</td>
<td>Ship Business &amp; Labor Relations</td>
<td>3</td>
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<td>MDK 206</td>
<td>Watchstanding II</td>
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<td>MDK 210</td>
<td>Sea Project Deck</td>
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<td>MDK 221</td>
<td>Lakes Piloting</td>
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<td>MDK 222</td>
<td>River Piloting</td>
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<td>MDK 242</td>
<td>Ship Stability</td>
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<td>MDK 311</td>
<td>Sea Project Deck</td>
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<td>MDK 312</td>
<td>Sea Project Deck</td>
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<td>MDK 324</td>
<td>Navigation III</td>
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<td>MDK 330</td>
<td>STCW Elementary First Aid</td>
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<td>MDK 331</td>
<td>Electronic Navigation</td>
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<td>MDK 332</td>
<td>Electronic Navigation Lab</td>
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<td>MDK 333</td>
<td>Automatic Radar Plotting Aids</td>
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<td>MDK 341</td>
<td>Ship Construction</td>
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<td>MDK 345</td>
<td>Dry Cargo Stowage</td>
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<td>MDK 404</td>
<td>Marine Supervisory Lab</td>
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<td>MDK 411</td>
<td>Marine Communications</td>
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<td>MDK 431</td>
<td>ECDIS</td>
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<td>MDK 444</td>
<td>Cargo Systems</td>
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<td>MDK 445</td>
<td>Liquid Cargo Stowage</td>
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<tr>
<td>MDK 446</td>
<td>Bridge Team Management</td>
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<tr>
<td>MDK 448</td>
<td>Pilot/Mate License Prep</td>
<td>4</td>
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<tr>
<td>MDK 454</td>
<td>GMDSS</td>
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<tr>
<td>MNG 100</td>
<td>Intro to Marine Engineering</td>
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<tr>
<td>MNG 105</td>
<td>Shipboard Information Systems</td>
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<tr>
<td>MNS 100</td>
<td>Naval Science</td>
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</tr>
</tbody>
</table>

Occupational Specialty Requirements 3

MGT 241 Principles of Management ...................... 3

Program Requirements 120

Program Information

NMC. Find it here.

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Maritime - Engineering Officer
Great Lakes Maritime Academy
Bachelor of Science in Maritime Technology

General Education Requirements Credits: 30-31
Communications: ENG 111 and either ENG 112 or ENG 220 ................................. 7-8
Humanities: PHL 202 ................................................. 3
Math competency: Placement into MTH 141 or higher, or completion of MTH 121 and MTH 122 ................. 7
Science: CHM 101 .................................................. 4
Social Science: PLS 101 ........................................... 3
Maritime program electives (must be approved by department) .............................. 6

Occupational Specialty Requirements 89-90
MDK 100 Survival at Sea ........................................... 1
MDK 149 Damage Control & Safety ............................. 2
MDK 250 Stability for the Engineer .............................. 1
MDK 330 STCW Elementary First Aid ........................... 2
MDK 341 Ship Construction ....................................... 2
MNG 100 Intro to Marine Engineering .......................... 1
MNG 104 Engine Systems Graphics .............................. 3
MNG 105 Shipboard Systems ..................................... 3
MNG 110 Engineering Mechanics .............................. 3
MNG 234 Electronic Fundamentals .............................. 4
MNG 250 Unloading Systems ..................................... 3
MNG 260 Maritime Machining ................................... 2
MNG 271 Maritime Welding ....................................... 2
MNG 275 Refrigeration .............................................. 3
MNG 314 Diesel Engineering ..................................... 7
MNG 317 Engineering Sea Project I ............................. 3
MNG 318 Engineering Sea Project II ............................ 6
MNG 319 Engineering Sea Project III ........................... 6
MNG 321 Marine Boilers .......................................... 3.5
MNG 322 Marine Turbines ....................................... 2.5
MNG 323 Marine Steam Lab .................................... 1
MNG 335 Electric Machines & Controls ......................... 4
MNG 336 Electric Machines & Controls Lab ................... 2
MNG 455 Watchstanding ......................................... 2
MNG 466 Engine Room Business ............................... 2
MNG 496 License Preparation Engine ........................... 2
MNS 100 Naval Science .......................................... 2
GLMA Program Electives ........................................ 14-15

Program Requirements 120

Maritime - Power Systems
Great Lakes Maritime Academy
Bachelor of Science in Maritime Technology

The Power Systems Program is designed to prepare individuals for employment in power production industries such as power plants, hospitals, industrial plants, and manufacturing plants. Operators in such industries read, interpret and adjust meters and gauges to make sure plant equipment and processes are working properly. Some operate chemical-feeding devices, take samples of the water or liquid water, perform chemical and biological laboratory analysis and adjust the amount of chemicals such as chlorine in the water. Some use a variety of instruments to sample and measure water quality and common hand and power tools to make repairs. Operators also make repairs to valves, pumps and other equipment. As facilities become more sophisticated and industry demands more from those individuals who maintain and operate these physical plants, there is a need for intense technical training for these positions. Students at the Great Lakes Maritime Academy obtain these goals through classes in mathematics, science and occupational courses. Cadets also have hands-on experience through labs and internships for practical training.

General Education Requirements Credits: 24
Communications: ENG 111 and ENG 220 ................. 7
Humanities: Any Group 1 Course ................................ 3
Math competency: Placement into MTH 141 or higher, or completion of MTH 121 and MTH 122 .......... 7
Science: CHM 101 .................................................. 4
Social Science: Any Group 1 Course ........................... 3

Occupational Specialty Requirements 96
DD 110 Basic Metallurgy .......................................... 3
EET 221 Industrial Controls ..................................... 3
EET 232 Programmable Logic Controllers ................. 3
MGT 241 Principles of Management .......................... 3
MNG 104 Engine Systems Graphics ........................... 3
MNG 105 Shipboard Information Systems ................. 3
MNG 110 Engineering Mechanics ............................ 3
MNG 234 Electronic Fundamentals ........................... 4
MNG 250 Unloading Systems ................................... 3
MNG 260 Maritime Machining ................................... 2
MNG 270 Issues in Power Production .......................... 3
MNG 271 Maritime Welding ...................................... 2
MNG 275 Refrigeration ........................................... 3
MNG 321 Marine Boilers ....................................... 3.5
MNG 322 Marine Turbines .................................... 2.5
MNG 323 Marine Steam Lab .................................. 1
MNG 335 Electric Machines & Controls ....................... 4
MNG 336 Electric Machines & Controls Lab ............... 2
Internship I* ......................................................... 6
Internship II* ....................................................... 6
Internship III* ..................................................... 3
GLMA Program Electives ........................................ 28

Program Requirements 120

* Courses under development.
Nursing - Associate Degree Program Requirements

**Associate Degree in Nursing**  NMC Code 302

Nursing students admitted to the nursing program prior to fall 2009 must follow the catalog requirements in effect the year they began unless they are returning as re-admitted students.

The NMC Associate Degree in Nursing (ADN) offers students the advantage of college-level academic and professional instruction in the classroom and clinical areas, and the preparation needed for employment after graduation. The associate degree program is a two-year course of study that begins each fall and spring semesters. All nursing courses in the ADN program must be completed within five years. Student clinical experiences may include assignments at Munson Medical Center and a variety of other agencies.

The program is approved by the Michigan Board of Nursing and accredited through the Accreditation Commission for Education in Nursing (ACEN). Graduates are eligible to apply for the National Council Licensure Examination (NCLEX-RN) for licensing as a registered nurse.

**ADMISSION REQUIREMENTS**

First students complete an NMC application with Pre-ADN as a current program of study. Once prerequisites are met, students are considered eligible to submit a competitive ADN application for admission to the Nursing Program. Completed competitive applications are submitted to the nursing office assistant by February 1 for Fall semester (August) and July 1 for Spring semester (January). Space in the nursing program is limited. Completion of prerequisites does not guarantee admission to the nursing program. Enrollment in any Nursing (HNR) course requires admission to the nursing program or approval of the nursing department director. HNR 100 and HNR 108 may be taken ahead of program admission if course prerequisites are met.

The following are required for the application process:

1. A 2.5 college GPA.
2. A 2.0 grade or above in each of the following prerequisite courses and/or demonstrated competency or equivalent college course transfer:
   - English Composition (ENG 111)
   - Introduction to Psychology (PSY 101)
   - Introductory Chemistry (CHM 101), two semesters of high school chemistry (2.5 combined average), or equivalent college chemistry course with a 2.0 GPA or above within ten years of program entry. Chemistry requirement for classes older than 10 years may be waived by passing the Chemistry competency exam if the class is older than 5 years.
3. Human Anatomy and Physiology I (BIO 227), with a 2.5 GPA, within five years of program entry or successfully complete a competency exam if the class is older than five years.

4. COMPASS Test Scores:
   - Math-66 or above in Algebra
   - COMPASS students must place into MTH 121-College Algebra. If not, students must take MTH 111-Intermediate Algebra (or equivalent course work) within five years of program entry.
5. ACT Test Scores:
   - ACT of 24 in math within five years of program entry.
   - ACT of 19 in reading and 18 in writing, (or equivalent course work) within five years of program entry.

**Note:** Any math and/or science class may only be repeated once. This includes fails, drops, audits or transferred classes.

**Recommended courses to take prior to Nursing Program Admission**

- BIO 228 – Human Anatomy and Physiology II with a 2.5 GPA, within five years of program entry
- BIO 240 – Normal and Clinical Nutrition
- PHL 202 – Contemporary Ethical Dilemmas
- ENG 112 – English Composition
- HPD 110 – AHA Basic Life Support for Health Care Workers (CPR and AED) Equivalent courses are: American Red Cross BLS for Health Care Providers or CPR/AED for Professional Rescuers and Health Care Providers.

**Note:** Current CPR certification must be documented by the start of the program, and maintained throughout the program.

**GENERAL INFORMATION**

- A physical examination and completion of the Certificate of Health documenting good mental and physical health is required prior to clinical course work.
- Criminal background checks and drug screens are required on all students entering the Associate Degree of Nursing and the Practical Nursing programs at Northwestern Michigan College. The costs associated with the background check and drug screen will be the sole responsibility of the nursing student and must be completed prior to the start of the program.
- The Board of Nursing may deny a license for a previous felony conviction, previous treatment for drug or alcohol abuse or after finding the existence of one or more grounds for board action listed in 333.16221 of the Public Health Code, Act 368 of 1978.
- The clinical facilities have the right to accept or reject a student. This action could result in a student being delayed or unable to complete the nursing program. This decision may be made just prior to the clinical rotation.
- Nursing program tuition is charged by the contact hour.

**General Education Requirements**

- **Credits:** 23-25
- Communications: ENG 111 and ENG 112 ...............6-8
- Humanities: PHL 202........................................3
- Math competency: Placement into MTH 121 or higher, or completion of MTH 111
- Science: BIO 227, BIO 228, BIO 240 ......................11
- Social Sciences: PSY 101 ...........................................3
Online Nursing Option
NMC admits students to an online version of its traditional nursing curriculum each fall. This option is intended for full-time ADN students. It provides all of the nursing theory of academic classes in an online format. It will still require attendance in person for the lab and clinical courses. The labs and clinical courses are generally scheduled in the Traverse City area and will require 2-3 days per week of attendance.

Once students begin the online option, the college will ensure that the online courses will be available until students complete the program as long as the full-time model schedule is followed.

If students need to change from the model online schedule or become out of sequence for any reason, students will need to move into the traditional program.

To apply, use the three-digit NMC Code on your admissions application.

Nursing Specialty Requirements

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*Equivalent classes are: American Red Cross BLS for Healthcare Providers or CPR/AED for Professional Rescuers and Health Care Providers.

**These credits do not count toward degree requirements.

Note: A 2.0 grade or higher is required in all Nursing (HNR) courses. A minimum of 68 credits are required to receive the Associate Degree in Nursing. Any HNR course failure counts as a nursing program fail and requires readmission. A second course failure is a nursing program dismissal.

Program Requirements 68-70

Nursing - ADN Completion Program

Completion Program for Licensed Practical Nurses

The ADN-Completion Program for Licensed Practical Nurses is designed to expand upon the previous education of the LPN. Upon completion of all non-nursing required coursework, the LPN who has current clinical work experience in acute or extended care or who has graduated within the past three years can complete the nursing course work in two semesters. The technology and patient acuity in the agencies utilized for clinical course work have changed greatly in recent years. Recent experience in these settings is important to the success of students pursuing this coursework.

Student clinical experiences may include assignments at Munson Medical Center and a variety of other agencies.

The program is approved by the Michigan Board of Nursing and accredited through the Accreditation Commission for Education in Nursing (ACEN). Graduates are eligible to apply for the National Council Licensure Examination (NCLEX-RN) for licensing as a registered nurse.

ADMISSION REQUIREMENTS
First students complete an NMC application with Pre-ADN for LPN as a current program of study. Once prerequisites are met, students are considered eligible to be placed on the waitlist. Pre-requisites are to be completed by February 1 for Fall semester (August) and July 1 for Spring semester (January). Space in the nursing program is limited. Completion of prerequisites does not guarantee admission to the nursing program. Should qualified applicants exceed space available, competitive admission criteria may apply. Enrollment in any Nursing (HNR) course requires admission to the nursing program and/or approval of the nursing department director.

The following are required for the application process:
2. Graduation from an accredited Practical Nursing Program with evidence of an official transcript with an overall GPA of 2.0 or above. Applicants must have work experience in the field of nursing or clinical coursework within the last three (3) years. Applicants who do not meet the work experience criteria will be required to complete the first year nationally normed nursing exam with a minimum competency as identified by the testing service before progressing in the program. If this minimum competency is not achieved, HNR 126 will be required. Additional assessments may be used to determine course placement.
3. Introductory Chemistry (CHM 101), two semesters of high school chemistry (2.5 combined average), or equivalent college chemistry course with a 2.0 GPA or above within 10 years of program entry. Chemistry requirement for classes older than 10 years may be waived by passing the chemistry competency examination.

(Continued page 50)
4. COMPASS Test scores: Math-66 or above in Algebra (or equivalent course work) within five years of program entry. Students must place into MTH 121-College Algebra. If not, students must take MTH 111-Intermediate Algebra.

5. Courses required for Admission Consideration:
- ENG 111 – English Composition (2.0 required)
- BIO 227 – Human Anatomy & Physiology I* (2.5 required)
- BIO 228 – Human Anatomy & Physiology II* (2.5 required)
- BIO 240 – Normal and Clinical Nutrition
- PSY 101 – Introduction to Psychology (2.0 required)
- HPD 110 – AHA Basic Life Support for Healthcare Providers (CPR and AED). Equivalent classes: American Red Cross BLS for Healthcare providers or CPR/AED for Professional Rescuers and Health Care Providers.
- * Completed within five years of program entry or successfully complete a competency exam if the class is older than five years.

Note: Any math and/or science class may only be repeated once. This includes fails, drops, audits or transferred classes.

GENERAL INFORMATION
- A physical examination and completion of the Certificate of Health documenting good mental and physical health is required prior to clinical course work.
- Criminal background checks and drug screens are required on all students entering the Associate Degree of Nursing and the Practical Nursing programs at Northwestern Michigan College. The costs associated with this background check and drug screen will be the sole responsibility of the nursing student and must be completed prior to the start of the program.
- The Board of Nursing may deny a license for a previous felony conviction, previous treatment for drug or alcohol abuse or after finding the existence of one or more grounds for board action listed in 333.16221 of the Public Health Code, Act 368 of 1978.
- The clinical facilities have the right to accept or reject a student. This action could result in a student being delayed or unable to complete the nursing program. This decision may be made just prior to the clinical rotation.
- Nursing program tuition is charged by the contact hour.

General Education Requirements  Credits: 23-25
Communications: ENG 111 (2.0 or higher)
and ENG 112 .........................................................6-8
Humanities: PHL 202..........................................................3
Math competency: Placement into MTH 121 or higher, or completion of MTH 111
Science: BIO 227, 228, 240 .............................................11
Social Sciences: PSY 101 ..............................................3

Nursing Specialty Requirements  Credits: 45
Level One Nursing Coursework ........................................23

Note: Credit for the practical nursing level coursework (HNR 100-145) must be established prior to admission to the program. At least 23 nursing credits must be established through NMC course completion or transfer equivalencies to meet the program requirements. Additional coursework may be required and will be arranged by the Nursing Director if needed.

HAH 100C Informatics Essentials................................. (1)
HNR 247 Nursing Management of Complex
Patients I-Lecture ....................................................3
HNR 248 Nursing Management of Complex
Patients I-Clinical ....................................................4
HNR 251 Mental Health Nursing-Lecture ....................2
HNR 252 Mental Health Nursing-Clinical....................1
HNR 261 Nursing Management of Complex
Patients II-Lecture ................................................3
HNR 262 Nursing Management of Complex
Patients II-Clinical ................................................4
HPD 110 AHA Basic Life Support for
Healthcare Providers*, **................................. (0.2)

* Equivalent courses are: American Red Cross BLS for Healthcare Providers or CPR/AED for Professional Rescuers and Healthcare Providers.
** These credits do not count toward degree requirements.

Note: A 2.0 grade or higher is required in all Nursing (HNR) courses. A minimum of 68-70 credits are required to receive the Associate Degree in Nursing.

Program Requirements  68-70
Nursing - Practical
Certificate of Achievement (Level II)  NMC Code 010

The NMC Practical Nursing Program is a two-semester certificate program after prerequisites are met. It is designed to give the student basic health care provider skills, which will enable them to become eligible to take the National Council Licensure Examination (NCLEX-PN). After successfully completing the NCLEX-PN exam, students are able to enter the work force in various healthcare settings. License Practical Nurses often work in offices, long-term care and home health care facilities. All nursing courses must be completed within five years.

The program is approved by the Michigan Board of Nursing and accredited through the Accreditation Commission for Education in Nursing (ACEN).

ADMISSION REQUIREMENTS
First students complete an NMC application with Pre-PN as a current program of study. Once prerequisites are met, students are considered eligible to be placed on the waitlist. Pre-requisites are to be completed by February 1 for Fall semester (August) and July 1 for Spring semester (January). Space in the nursing program is limited. Completion of prerequisites does not guarantee admission to the nursing program. Should qualified applicants exceed space available, competitive admission criteria may apply. Enrollment in any Nursing (HNR) course requires admission to the nursing program OR approval of the Nursing Program Director. HNR 100 and HNR 108 may be taken ahead of program admission if course prerequisites are met and space available.

The following are required for the application process:
1. 2.0 college GPA.*

2. COMPASS test scores: Reading- 82 or above, Writing- 70 or above, Math- 66 on Algebra (or equivalent coursework) within five years of program entry. Students must place into MTH 121-College Algebra. If not, students must take MTH 111-Intermediate Algebra, OR have an ACT score of 19 for reading and writing, and math ACT of 24 (Reading and writing COMPASS scores are required for students who do not transfer equivalent courses).*

3. Courses required for admission consideration.
   Introductory Chemistry (CHM 101)*, two semesters of high school chemistry (2.5 combined average), or equivalent college chemistry course with a 2.0 GPA or above within ten years of program entry. Chemistry requirement for classes older than 10 years may be waived by passing the Chemistry competency examination.
   BIO 227-Anatomy and Physiology I* – 2.5 GPA required. Must be taken within five years of program entry. If not, students may retake BIO 227 and BIO 228 or successfully complete a competency exam. BIO 227 has specific prerequisites that may require additional coursework.

4. Courses recommended to be completed prior to starting the PN program.
   • BIO 228 - Anatomy and Physiology II with a 2.5 GPA required.
   • BIO 240 - Normal and Clinical Nutrition
   • HPD 110 - AHA Basic Life Support for Health Care Providers

* Eligible for waitlist once these prerequisites are completed.

Note: Any math and/or science class may only be repeated once. This includes fails, drops, or transferred courses.

GENERAL INFORMATION
• A physical examination and completion of the Certificate of Health documenting good mental and physical health is required prior to clinical coursework.
• Criminal background checks and drug screens are required on all students entering the Associate Degree of Nursing and the Practical Nursing programs at NMC. The costs associated with this background check and drug screen will be the sole responsibility of the nursing student and must be completed prior to the start of the program.
• The Board of Nursing may deny a license for a previous felony conviction, previous treatment for drug or alcohol abuse or after finding the existence of one or more grounds for board action listed in 333.16221 of the Public Health Code, Act 368 of 1978.
• The clinical facilities have the right to accept or reject a student. This action could result in a student being delayed or unable to complete the nursing program. This decision may be made just prior to the clinical rotation.
• Nursing program tuition is charged by the contact hour.

Certificate Requirements  Credits: 35

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIO 227</td>
<td>Human Anatomy &amp; Physiology I with Lab</td>
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</tr>
<tr>
<td>BIO 228</td>
<td>Human Anatomy &amp; Physiology II with Lab</td>
<td>4</td>
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<tr>
<td>BIO 240</td>
<td>Normal and Clinical Nutrition</td>
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<td>HNR 100</td>
<td>Introduction to Nursing</td>
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<td>HNR 101</td>
<td>Fundamentals of Nursing-Lecture</td>
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</tr>
<tr>
<td>HNR 102</td>
<td>Fundamentals of Nursing-Clinical</td>
<td>4</td>
</tr>
<tr>
<td>HNR 108</td>
<td>Pharmacology</td>
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<tr>
<td>HNR 125</td>
<td>Nursing Across the Lifespan-Lecture</td>
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<tr>
<td>HNR 126</td>
<td>Nursing Across the Lifespan-Clinical</td>
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<tr>
<td>HNR 145</td>
<td>Practical Nursing Role &amp; Issues</td>
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<tr>
<td>HAH 100C</td>
<td>Informatics Essentials</td>
<td>1</td>
</tr>
<tr>
<td>HPD 110</td>
<td>AHA Basic Life Support for Health Care Providers*</td>
<td>**(0.2)</td>
</tr>
</tbody>
</table>

* Equivalent courses are: American Red Cross BLS for Healthcare Providers or CPR/AED for Professional Rescuers and Health Care Providers
**These credits do not count toward degree requirements.

Note: A 2.0 grade or higher is required in all Nursing (HNR) courses.
Paramedic

Associate in Applied Science Degree in partnership with Munson Medical Center

Northwestern Michigan College (NMC) and Munson Regional EMS have partnered to offer an Associate in Applied Science Degree (AAS) with a Paramedic focus. All general education classes are offered at NMC. All paramedic classes are offered through Munson Regional EMS. The program is designed to allow the transfer of 43 paramedic credits from Munson Regional EMS to NMC. With the completion of 18 or more general education credits as identified in the NMC program map, the student will earn an AAS – Paramedic.

ADMISSION REQUIREMENTS

To earn an AAS - Paramedic students must obtain a Basic EMT license and complete two years' experience or 200+ documented emergency patient contacts. This can be completed concurrently while taking NMC classes. Students interested in pursuing a degree in Paramedic would follow the guidelines below for application to NMC and registration of classes.

1. Complete an application for admissions through NMC at www.nmc.edu/admissions/future-students/
2. Request to have an official high school transcript sent to the Admissions Office.
3. Schedule an orientation session after an admission letter is obtained.
4. Take the COMPASS test or submit your ACT scores prior to orientation.
5. Meet with an academic advisor
6. Bring COMPASS scores to paramedic program contact at Munson Regional EMS.

The following are required for application:

Students must complete either the COMPASS or ACT Test:
1. COMPASS: Math: 41 or above in Algebra. Students must place into MTH 111 Intermediate Algebra. If they do not, students must take MTH 23 Beginning Algebra and earn a 2.0 or better.
2. ACT: ACT score of 24 for math (within 5 years).

Degree Requirements

1. Complete at least 60 credit hours with a 2.0 or higher cumulative grade point average. A model schedule can be found at www.nmc.edu/programs/academic-programs/paramedic/
2. Complete a minimum of 15 of the 60 credits at NMC.
3. Apply for graduation by completing the Application for Degree available online or in the Records & Registration Office on the main floor of the Tanis Building.
4. Request an official document from Munson Regional EMS contact to confirm successful completion of the Paramedic program.
5. Submit a copy of your Paramedic license the NMC Records & Registration Office.
Plant Science

Associate in Applied Science Degree

Agricultural Operations ....................... NMC Code 585
Fruit and Vegetable Crop Management ....... NMC Code 581
Landscape Management ...................... NMC Code 580

NMC and MSU offer a joint program that can lead to an Associate in Applied Science degree in the areas of Agricultural Operations, Fruit and Vegetable Crop Management, Landscape Management or Viticulture through NMC. Students dual enroll with NMC and MSU at the University Center. After completing a minimum of 48 credits in the program, a certificate is awarded from the MSU Institute of Agricultural Technology. Upon meeting the program requirements for the AAS, students may transfer to the MSU East Lansing Campus as a junior to complete a Bachelor of Science degree. The AAS degree is awarded upon completion of the MSU certificate and the following additional NMC courses. See your MSU advisor prior to enrolling each semester.

MSU Institute of Agricultural Technology
2200 Dendrinos Drive, Suite 203, Traverse City, MI 49684
Phone: (231) 995-1719
Email: matchet4@msu.edu

General Education Requirements .......... Credits: 17-19
Communications: ENG 111 and either BUS 231 or
ENG 112 or ENG 220 .................................. 7-8
Humanities: Any Group 1 course ............... 3-4
Math competency: Placement into MTH 111 or higher, or
completion of MTH 23
Science: BIO 108 ...................................... 4
Social Science: ECO 201 or ECO 202 ......... 3

NMC Occupational Specialty Requirements Credits: 8-16
CIT 100 Computers in Business-An Intro (or equivalent) ....... 3
NMC directed electives (see program coordinator for appropriate selection) ..................... 5-13

MSU Occupational Specialty Requirements Credits: 27-35
(Select from the following MSU areas of interest.)

MSU Agricultural Operations Requirements Credits: 35
ABM 130 Farm Management I .................. 3
AE 131 Agricultural Water Resource Management .... 3
AE 143 Application of Precision Agriculture Technologies .......... 3
AT 202 Agricultural Regulation, Compliance and Safety .......... 3
AT 293 Professional Internship in Agricultural Technology .......... 3
CSS 101 Introduction to Crop Science ............... 3
CSS 105 Agricultural Industries Seminar ............. 1
CSS 135 Crop Scouting and Investigations ............ 3
CSS 210 Fundamentals of Soil Science ............... 3
ENT 110 Applied Entomology of Economic Plants ............ 3
PLP 200 Plant Diseases and Their Pathogens .......... 3

A minimum of four additional CANR credits must be completed with approval from the program coordinator.

MSU Fruit and Vegetable Crop Management Requirements Credits: 27
AT 202 Agricultural Regulation Compliance and Safety ............... 3
AT 293 Professional Internship in Agricultural Technology .......... 3
CSS 210 Fundamentals of Soil Science ............... 3
ENT 110 Applied Entomology of Economic Plants ............ 3
HRT 206 Training and Prunig Plants ................. 1
HRT 207 Horticulture Career Development .......... 1
HRT 218 Irrigation Systems for Horticulture ............ 3
PLP 200 Plant Diseases and Their Pathogens ............ 3

A minimum of seven additional IAT approved CANR credits must be completed with approval from the program coordinator.

MSU Landscape Management Requirements Credits: 27
AT 202 Agricultural Regulation Compliance and Safety ............... 3
AT 293 Professional Internship in Agricultural Technology .......... 3
CSS 210 Fundamentals of Soil Science ............... 3
ENT 110 Applied Entomology of Economic Plants ............ 3
HRT 211 Landscape Plants I ...................... 3
HRT 212 Landscape Plants II ...................... 3
HRT 213 Landscape Maintenance ................... 2
HRT 218 Irrigation Systems for Horticulture ............ 3
PLP 200 Plant Diseases and Their Pathogens ............ 3

MSU Viticulture Requirements Credits: 32
AT 202 Agricultural Regulation Compliance and Safety ............... 3
AT 293 Professional Internship in Agricultural Technology .......... 3
ENT 110 Applied Entomology of Economic Plants ............ 3
HRT 232 Principles & Practices of Grape Production I ............... 3
HRT 234 Current Issues in Viticulture & Enology .......... 1
PLP 200 Plant Diseases & Their Pathogens ............ 3

Required: Complete 16 credits through VESTA (Viticulture and Enology Science and Technology Alliance) as approved by the program coordinator............................. 16

Program Requirements .......................... 60

MSU Transfer Students: Students wishing to transfer to MSU as juniors must meet with the program coordinator during their first semester to alter general education courses to meet MSU transfer requirements.

www.nmc.edu | 53
Respiratory Therapy - RT
Associate in Applied Science Degree through
Muskegon Community College
NMC Code 712

Northwestern Michigan College is a partner with Muskegon Community College and Munson Medical Center to offer a collaborative program leading to an Associate in Applied Science degree. All liberal arts and science courses can be taken through NMC. All didactic respiratory classes will be offered at Munson Medical Center via live interactive television from Muskegon Community College. Most clinical courses can be completed at Munson Medical Center. This program is fully accredited by the Joint Review Committee for Respiratory Therapy Education.

The respiratory therapy program begins each fall semester. Enrollment in the program is based on the student meeting the following criteria: overall GPA of 2.0 and proficiency testing in Beginning Algebra and successful completion of ENG 111. Depending on placement test results and high school and/or college transcript evaluation, some prerequisite classes may be required. Class sizes generally begin with eight students in the Munson interactive classroom.

After completing more than two years of instruction, the therapist student receives the Associate in Applied Science degree (AAS) from Muskegon Community College. The student must pass the advanced practical examination given by the National Board for Respiratory Therapy in order to receive credentials.

ADMISSION REQUIREMENTS
Enrollment in any Respiratory Therapy (RT) course requires admission to the Respiratory Therapy program. Consideration for admission requires satisfactory completion of program prerequisites and admission to both Muskegon Community College and the Respiratory Therapy program. Space in the Respiratory Therapy program is limited. Completion of prerequisites does not guarantee admission to the Respiratory Therapy program. Students interested in pursuing a degree in Traverse City for Respiratory Therapy from Muskegon Community College would follow these guidelines for application to and registration in the program.

1. Submit an application to Northwestern Michigan College. Applications are available at www.nmc.edu/admissions or at the Admissions Office (231) 995-1054.
2. Meet with an NMC advisor or Health Occupations Respiratory Therapy Advisor to complete your educational development plan for completing your degree.
3. Complete the basic criteria for admissions to the Respiratory Therapy program including: overall GPA of 2.0 and proficiency testing in Beginning Algebra and successful completion of ENG 111.
4. Apply for Admission to Muskegon Community College and the Respiratory Therapy program at www.muskegoncc.edu/allied-health/respiratory-therapy-program-admission-application/ or applications are also available by calling (231) 995-1235.
Surgical Technology

**Associate in Applied Science Degree  NMC Code 311**

Northwestern Michigan College’s Surgical Technology program is designed to give students the necessary skills and preparation for employment after graduation. Graduates of the program will be eligible to apply for the Certified Surgical Technologist exam through the National Board of Surgical Technology and Surgical Assisting (NBSTSA). The program includes 36 credit hours of classroom, lab and clinical components over four semesters after prerequisites are met. Cohorts will typically begin in the fall semester and graduate in December (fall, spring, summer, and fall).

**ADMISSION REQUIREMENTS**

- Follow the current NMC admission process, selecting program code 921 as the program of study.
- A completed NMC application, testing and all supporting documentation must be on file before student eligibility can be determined. This includes submission of an official high school transcript.
- Students must maintain eligibility throughout the application and admission process, which includes maintaining the required GPA and ensuring biology skills do not expire.

**GPA REQUIREMENTS:**

- College GPA of 2.0. (Overall GPA is defined as a combination of NMC GPA and any transfer courses counted toward the AAS degree.)
- General education course equivalents may be transferred from another institution according to the college transfer policy.
- Catalog pre-requisites for all courses may be found at www.nmc.edu/programs/course-descriptions

**MATH COMPETENCY:**

- Placement score into MTH 121 – College Algebra or higher, or
- Successful completion of MTH 111 – Intermediate Algebra (2.0 or above required)

**COURSES REQUIRED FOR ADMISSION CONSIDERATION:**

Must be completed with a 2.0 or above, unless noted.

- ENG 111 – English Composition I
- HAH 101 – Medical Terminology
- BIO 227/227L – Human Anatomy & Physiology I* (must be within last seven years)
- HPD 110 – BLS for Healthcare Providers (grade required: S) or equivalent courses are: American Heart Association BLS for Healthcare Providers (CPR and AED), or American Red Cross: Basic Life Support for Healthcare Providers or CPR/AED for Professional Rescuers and Healthcare Providers.

**COURSES RECOMMENDED PRIOR TO STARTING THE SURGICAL TECHNOLOGY PROGRAM:**

- BIO 228/228L – Human Anatomy & Physiology II* (2.0 or above required)
- If not successfully completed prior to beginning the program, must be taken during Semester I.
- * Transfer students must have completed course work equivalent to BIO 227 and BIO 228 with a 2.0 or better within the last seven years before transfer credit will be considered.

**ADDITIONAL REQUIREMENTS:**

May be taken concurrently with surgical technology courses.

- BUS 231 – Professional Communications, * or ENG 112 – English Composition II
- PSY 101 – Introduction to Psychology or SOC 101 – Introduction to Sociology
- Humanities Group I course

* BUS 231 is recommended to meet the communications requirement for the AAS degree; however, students who anticipate transferring credits to another school or who plan to pursue a four-year degree at some point in the future are advised to take ENG 112.

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Technical Management Administration

**Associate in Applied Science Degree  NMC Code 573**

Adding technical training to a business background has long been recognized as a powerful combination in the job market. Technicians often work with non-technical personnel such as accountants, managers, and data processors.

In order to obtain this successful combination of technical and business skills, students who have earned an Associate in Applied Science degree in a technical program may earn a second AAS degree in Technical Management Administration by completing 32 additional credits with a business emphasis.

**Please note:** This program is available only to students who have already completed an associate degree program in a technical area (Technical, Health, and Visual Communications programs). This program is not available to the student whose first degree is from a Business program.

**Previous Technical focused AAS degree**

<table>
<thead>
<tr>
<th>Occupational Specialty Requirements</th>
<th>Credits: 60-64</th>
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<tbody>
<tr>
<td>ACC 121 Accounting Principles I</td>
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<tr>
<td>ACC 122 Accounting Principles II</td>
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<tr>
<td>BUS 101 Introduction to Business</td>
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</tr>
<tr>
<td>BUS 231 Professional Communications</td>
<td>3</td>
</tr>
<tr>
<td>BUS 261 Business Law I</td>
<td>3</td>
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<tr>
<td>CIT 100 Computers in Business-An Intro</td>
<td>3</td>
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<tr>
<td>MGT 241 Principles of Management</td>
<td>3</td>
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<tr>
<td>MGT 251 Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 201 Principles of Marketing</td>
<td>3</td>
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<tr>
<td>Any Business Area Elective (BUS, MGT, MKT)</td>
<td>3</td>
</tr>
</tbody>
</table>
Visual Communications

Associate in Applied Science Degree  NMC Code 351

Certified Trainer
Final Cut X

Certified Associate
AUTHORIZED TESTING CENTER

Students in this program explore a full range of skills: drawing, typography, photography, graphic design, illustration technique, animation, film, new media and social media design. In unique, studio-like classrooms there are plentiful opportunities for hands-on work including customized projects based on portfolio goals and real-world pieces published in the community. They participate and lead critiques and reviews with peers as well as clients/instructors. Several of the digital courses are led by Apple and Adobe Certified trainers. Apple and Adobe Certification and testing is available and is part of the Time Based Media, Digital Imaging, Digital Graphic Design and Typography classes.

General Education Requirements  Credits: 18-19
Communications: ENG 111 and ENG 112 ...............8
Humanities: ART 111 or ART 112 (preferred) ......... 3-4
Math competency: Placement into MTH 111 or higher, completion of MTH 23
Science: Any Group 1 course with a lab ...............4
Social Sciences: Any Group 1 course ................. 3

Occupational Specialty Requirements  45
ART  121  Drawing I .........................3
ART  131  2-D Design ......................3
VCA  100  Materials and Techniques ..........3
VCA  125  Typography I ..................3
VCA  126  Typography II .................3
VCA  127  Digital Imaging ................3
VCA  146  Interactive Animation or
ART  174  Digital Photography ................3
VCA  147  Web Design I ...................3
VCA  150  Digital Graphic Design ..........3
VCA  200  Visual Communications II .......3
VCA  220  Visual Communications III ......3
VCA  225  Visual Communications Studio ....3
VCA  230  Visual Communications V ..........3
VCA  235  Visual Communications Portfolio ....3
VCA  250  Time Based Media I .............3

Program Requirements  63-64

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Visual Communications - Creative Management in Art Direction

Associate in Applied Science Degree  NMC Code 251

Certified Trainer
Final Cut X

Certified Associate
AUTHORIZED TESTING CENTER

This Visual Communications program is designed for students who have already earned the VCA Associate in Applied Science degree and are looking to expand their skills for local employment opportunities instead of transferring to a four-year BFA or university program. This degree focuses on a tailored set of courses from other disciplines that will expose students to marketing, copywriting, small business management, digital photography and other practical skills that will help them enter the work force. A 180 hour summer internship with a local marketing/design/advertising or film firm is a required part of this program.

Previous Visual Communications AAS degree  64

General Education Requirements  Credits: 31-32
ART  174  Digital Photography or
VCA  146  Interactive Animation..............3
ART  175  Color Photography I ............3
ART  181  Printmaking I ..................3
ART  213  Modern Art History ..............3
BUS  155  Interpersonal Communications or
BUS  231  Professional Communications ....3
CIT  180  HTML and CSS Programming ......3
ENG  220  Technical Writing or
ENG  221  Creative Writing ................3
ENG  266  Popular Culture or
COM  201  Mass Communication and Culture ....3-4
MKT  201  Principles of Marketing or
MKT  241  Principles of Advertising ......3
VCA  290  Visual Communications Internship ....4
Welding Technology

Certificate of Achievement (Level II)  NMC Code 036

To apply, use the three-digit NMC Code on your admissions application.

The Welding Technology courses are designed to meet the needs of beginning welding students as well as the needs of people who are upgrading their welding skills. Students will develop their skills in this area through laboratory experience using equipment representative of the welding industry. Welding classes can prepare students to be a certified welder, provide a certificate in Welding Technology, or an Associate in Applied Science degree through the Manufacturing Technology program. The welding curriculum includes Oxyacetylene, Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), and Gas Tungsten Arc Welding (GTAW), on both ferrous and nonferrous materials.

Certificate Requirements  Credits: 30

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MFG 111</td>
<td>Math for Manufacturing</td>
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<tr>
<td>WPT 110</td>
<td>Oxy-Fuel Processes Thermal Cutting</td>
<td>3</td>
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<tr>
<td>WPT 120</td>
<td>GTAW (TIG) Welding I</td>
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<td>WPT 140</td>
<td>GMAW (MIG) Welding</td>
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<td>WPT 141</td>
<td>GMAW (ARC) Welding II</td>
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<td>WPT 142</td>
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<td>WPT 160A</td>
<td>Welding Qualification Prep (GMAW)</td>
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<td>WPT 160B</td>
<td>Welding Qualification Prep (GTAW)</td>
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<tr>
<td>WPT 160C</td>
<td>Welding Qualification Prep (FCAW)</td>
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Welding Technology

Certificate of Achievement (Level III)  NMC Code 016

After completing the Welding Certificate Level II students may elect to obtain a Welding Certificate Level III. Students will advance their skills in this area through more laboratory experience using equipment representative of the welding industry. Welding classes can prepare students to be a certified welder, provide a certificate in Welding Technology, or an Associate in Applied Science degree through the Manufacturing Technology program. The welding curriculum includes Oxyacetylene, Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), and Gas Tungsten Arc Welding (GTAW), on both ferrous and nonferrous materials.

Level II Certificate Requirements  Credits: 30

<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tr>
<td>DD 101</td>
<td>Print Reading and Sketching</td>
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<tr>
<td>DD 110</td>
<td>Basic Metallurgy</td>
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<tr>
<td>MFG 113</td>
<td>Machining</td>
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<tr>
<td>WPT 110</td>
<td>Oxy-Fuel Processes Thermal Cutting</td>
<td>3</td>
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</tbody>
</table>

Approved elective ................................................................ | 3

Total Level III Certificate Requirements  45
Student Rights and Responsibilities (Policy D-602.01)

The purpose of the Student Rights and Responsibilities statement is to define a student’s basic rights within the college community, state what actions students may expect from the college to protect those rights, and explain the college’s expectations of its student members, including the standards by which student behaviors are measured. This statement describes unacceptable student behavior and outlines the procedures by which students are disciplined if they engage in unacceptable conduct. www.nmc.edu/about/policies/board-staff/D-602.01.html

Credit Equivalences
An associate degree requires a minimum of 60 semester credits, or 96 quarter credits. A bachelor’s degree usually requires a minimum of 120-128 semester credits, or 180-192 quarter credits. Thus, when credits are transferred from a college on the quarter system to a college on the semester system, a quarter credit is equivalent to two-thirds of a semester credit. For example, 30 quarter credits become 20 semester credits. No credits are “lost;” they are simply converted to a different unit. This may result, however, in some fractional credits. Obtain complete transfer information from a counselor.

Adding Classes
Courses are set up in sessions which vary by the number of weeks they meet (15-week, 8-week, 5-week, etc.). Students may add available courses up through the day before the session begins. Once the session begins, permission to add may be required from the Academic Chair or Office Manager (not the instructor). Not all academic areas will allow registration after the session has started.

Dropping Classes
Students must officially drop classes during the designated dates listed in the semester Registration Guide or online to obtain any refund or prevent receiving a grade at the end of the semester.

- Students dropping all of their classes may drop courses online at www.nmc.edu/selfservice if there are no holds on the student’s record. You may also complete an enrollment form in the Records and Registration Office, or mail or fax a letter to the Records Office at (231) 995-1956. Include name, NMC ID, semester and signature. The date the letter is received is the official date of the withdrawal.
- Students dropping some of their classes may do so online at www.nmc.edu/selfservice if no holds are present or in the Records and Registration Office.

If you wish to drop either some or all classes online and have a hold, call (231) 995-1049 for options. In most cases, the hold may be temporarily moved to allow you to drop.

Courses may be dropped without record through the add period of the session that the course is offered. Courses dropped after the add period and before the last 25 percent of the session will be dropped with record. A grade of “W” (Withdrawn) will be assigned. This grade will not affect the NMC grade point average. Dropping a class is not permitted during the last 25 percent of the session in which the course is offered. It is the student’s responsibility to notify their instructor(s) of the drop and be aware of any financial obligations.

Student Rights and Responsibilities / NMC Policies

Academic Policies
Northwestern Michigan College is committed to open access to higher education and to your academic success. Our intent is to offer support and remediation for students who are considered at risk of academic failure.

Attendance
Attendance is critical to student academic progress. Even though attendance expectations may differ from course to course, you are expected to be present, prepared, and be active participants in your classes. Students will receive a written attendance policy from the instructor at the first class meeting. A student who is repeatedly absent from class without good reason may be withdrawn from the course by the instructor.

Credit for Prior Learning
Students who have achieved competency in certain skill or course work areas may receive credit for classes or waivers of prerequisite classes. This competency could be gained through life, work, or military experience; vocational training at an area vocational, career or skill center; or completion of high school advanced placement courses. Assessment of proficiencies may be demonstrated through the following options:

- AP (Advanced Placement) credit achieved through high school courses;
- CLEP (College Level Examination Program);
- ACE (American Council on Education) for veterans;
- DSST (Dantes Subject Standardized Test);
- Competency Assessment in some NMC courses;
- Course waiver;
- Articulation credit for work at the Traverse Bay Area Career Tech Center

Students who wish to pursue credit or waivers for competencies should go to www.nmc.edu/records or contact the NMC Registrar in the Records and Registration Office in the Tanis Building. Students wanting information or to register for the CLEP exam should call (231) 995-1360.

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NMC. Find it here.
Grades

STANDARD GRADING SYSTEM AT NMC:

4.0 - outstanding
3.5 - excellent
3.0 - good
2.5 - above average
2.0 - average
1.5 - below average
1.0 - deficient
0.0 - failed
S - satisfactory
U - unsatisfactory
I - incomplete
W - withdrawn
FA - failed to attend
AU - audit

S/U (satisfactory/unsatisfactory) may be given to designate the level of performance in courses which evaluate completion of specified competencies. (For designated courses only.)

I (incomplete) may be given at the discretion of the instructor if it is believed that the student has a valid reason for not having completed the course work and can fulfill the requirements of the course during the next semester. An incomplete not made up by the end of the next semester automatically becomes a 0.0. Incompletes may be extended one additional semester at the discretion of the instructor.

W (withdrawn) will be given to the student who officially withdraws from the class after the add period and before the last 25 percent of the session.

FA (failed to attend)—may be given if a student registered for a course but never attended and did not officially drop. FA will not affect a student’s GPA.

AU (audit) can be issued at the time of registration upon full payment of tuition and fees if a student wishes to attend a class without receiving college academic credit or a grade. Changing from “credit” to “audit” may take place through seventy-five percent of the academic session. Changing from “audit” to “credit” must be completed during the add period. Dates can be found online or in the current Registration Guide.

GOOD STANDING

You are considered to be in academic good standing when you have a minimum overall grade point average of 2.0.

GRADE POINT AVERAGE

Grade point average (GPA) is a weighted average of grades. A grade for a course is multiplied by the credit hours for that course to obtain “points.” Total points are then divided by total credit hours to determine the grade point average. A GPA calculator is available online.

When a course is repeated, both the most recent grade and the previous grade will appear on the transcript (official academic record). However, only the last grade will be counted in the NMC cumulative GPA. Grades of S, U, I, W, FA, and AU are not used in the computation of grade point averages. Consult with the Advising Center with questions.

DEAN’S LIST

Students who have completed six or more credits and achieved a semester grade point average (GPA) of 3.5 or higher qualify for the Dean’s List. Each student receives a congratulatory letter from the Vice President for Educational Services. Dean’s List students will have their names listed in the lobby between the Biederman and Tanis buildings, and posted online.

GRADE POINT RE-EVALUATION

Northwestern Michigan College offers you an opportunity to improve upon a cumulative grade point average by repeating a course or courses, or by petitioning for a grade point re-evaluation under special circumstances. These options provide you with the opportunity to achieve a cumulative grade point average that is truly representative of your capabilities. You may pursue this option by calling the Advising Center for petitions and further information: (231) 995-1040. Transfer institutions may or may not recognize GPA re-evaluation.

For more information on GPA re-evaluation, visit www.nmc.edu/records and click on “grades.”

Academic Probation

Any student whose cumulative grade point average is below a 2.0 is considered academically at risk and will be placed on academic probation. The purpose of academic probation is to assure careful academic planning and referral to support services while the student attempts to improve his or her academic record.

SUPPORT & INTERVENTION FOR STUDENTS ON ACADEMIC PROBATION

Any student who is on probation must meet with an academic advisor prior to registering for any semester or session until the status of probation is removed. This enables the student to build a realistic academic program and receive appropriate referrals to support services that afford the maximum possibility for success. Students who are on probation may not take more than 12 semester credits during fall/spring semester, or six credits during the summer session. The status of academic probation is removed when the student’s cumulative grade point average becomes 2.0 or higher.

Academic Suspension

When a student has been on probation for two semesters and is unable to maintain a current grade point average of 2.0 or higher, that student will be suspended from academic enrollment for a period of one semester of the regular academic year (not including summer.) A student may appeal academic suspension to the Registrar in writing.
REINSTATEMENT FOLLOWING ACADEMIC SUSPENSION
A student who has been academically suspended is encouraged to petition the Registrar for reinstatement when the waiting period is over if he/she feels that sufficient changes have occurred to enable academic success. This petition must be made in writing at least two weeks prior to the beginning of the semester for which the student is seeking re-entry.

Grade Alert
Learning is dependent upon regular feedback regarding student performance. Students and instructors are both responsible for this communication. Students achieving less than a 2.0 in any 15-week class may receive notification to their NMC email around the midpoint of the academic session encouraging them to contact their instructor.

Repeating Courses
Northwestern Michigan College offers you an opportunity to improve upon a cumulative GPA by repeating a course or courses. All courses and grades will appear on the transcript (official academic record); however, only the last grade will be counted in the cumulative grade point average. Most courses at NMC can be taken a maximum of three times. Exceptions are activity courses such as physical education and applied music. Financial Aid may have further restrictions and should be consulted.

Transcripts
Students who plan to attend another college or university will need to send an official transcript of their academic record to that college. Often new employers require an official copy of your transcript. A transcript is a list of the academic courses taken at NMC and the grades earned. Your official transcript will be sent to colleges or employers upon your written request. If you request the transcript be sent to you, it may not be considered official. Each request should include:

1. Your name, permanent address, and NMC ID or social security number
2. Name and address where the transcript is to be mailed
3. Your signature
4. Your phone number
5. $5 for each transcript

Requests may be made online at [www.nmc.edu/selfservice](http://www.nmc.edu/selfservice), in person, by mail or by fax (231) 995-1956. Fax requests will be honored if you include your charge card number (Visa, MasterCard or Discover) and expiration date to cover the transcript fee.

Transcripts may be faxed to a third party but may not be considered official. Contact the third party for confirmation. To protect the confidentiality of the student, telephone requests cannot be honored. Students may obtain an unofficial copy of their transcript at no charge through the self-service menu at [www.nmc.edu/registration](http://www.nmc.edu/registration). All transcripts printed on transcript paper through the Records Office have a fee of $5. Transcript requests can be completed only if all fees and obligations to NMC have been fulfilled.

Inclement Weather Policy
It is the policy of Northwestern Michigan College to maintain normal operations on regularly scheduled days, except in very rare cases when severe weather conditions prevent this.

It is further the policy of NMC that each staff member and student will make his or her own determination concerning attendance on unfavorable travel days.

Given unfavorable weather conditions, NMC may delay or close, in which case the following actions will be taken:

- For daytime classes, a decision to delay the opening of the college or close entirely will be communicated by 6 a.m.
- For evening schedules, delays or closings will be announced by 3 p.m. There is a possibility that NMC would cancel all day classes and hold evening classes.
- If the college delays opening, students should report to class at the designated opening time. If a student’s class begins before the designated opening time, that class would be canceled unless one-hour of instruction remains after the designated opening time. Up-to-date information regarding class cancellations and college closings will be communicated on the 24-hour phone line: (231) 995-1100.
- College delays or closures will be reported to area radio and television stations (a list of stations is available in the Office of Institutional Advancement) campus video monitors, public access channel, NMC’s general information number (231) 995-1000, and online.
- College delays or closures will be reported via email to all faculty and staff, via email to all student email accounts, and via text message to those students who are subscribed to receive alerts on their cell phones.
- For weekend academic courses, the college closure/delay decision will first be enforced. If, on the other hand, a faculty member determines he/she cannot make it to campus for their particular class, the faculty member teaching the weekend course will update his/her voicemail greeting with the class cancellation information. Weekend students should then call their instructor’s voicemail rather than the 24-hour phone line.

Non-Discrimination Policy
Northwestern Michigan College is committed to a policy of equal opportunity for all persons and does not unlawfully discriminate on the basis of race, color, national origin, religion, disability, genetic information, height, weight, marital status or veteran status in employment, educational programs and activities and admissions. In addition, although not mandated by law, it is the policy of Northwestern Michigan College to prohibit discrimination in employment, educational programs and activities and admissions. In addition, although not mandated by law, it is the policy of Northwestern Michigan College to prohibit discrimination in employment, educational programs and activities and admissions on the basis of sexual orientation, gender identity and gender expression. [www.nmc.edu/nondiscrimination](http://www.nmc.edu/nondiscrimination)
Harassment Policy

Northwestern Michigan College (NMC) prohibits sexual misconduct, which includes but is not limited to: rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, and domestic violence. Sexually violent acts, termed sexual misconduct by NMC are violations of NMC’s Student Rights & Responsibilities, and can be crimes as well.

The College shall promptly and thoroughly investigate complaints of discrimination and/or harassment. Complaints of discrimination and/or harassment will be treated as confidentially as possible. The College will conduct fair, thorough, impartial, and timely investigation of the allegation(s) presented in a complaint. Procedures detailing the investigation and resolution processes of NMC can be found online: www.nmc.edu/policies (D-702.01 - Discrimination and Harassment Complaint Procedure).

For additional information, contact the Vice President for Enrollment Management and Student Services at (231) 995-1046. Employees may contact the Director of Human Resources at (231) 995-1342.

Right to Know

In 1990, Congress passed into law the Student Right-to-Know and Campus Security Act. The legislation is designed to provide better consumer information to students and their families by requiring institutions of higher education to compile and report completion or graduation rates, job placement statistics, crime statistics, as well as general information about the college. Job placement statistics, crime statistics, and general information about the college is available in the Registration Guide and the student newspaper, or may be obtained in the Admissions Office, Tanis Building, (231) 995-1054. For completion or graduation rates contact the NMC Registrar at (231) 995-1058. All Board of Trustee and Student Government meetings are open to students.

Campus Security & Safety Policy

The safety of students, faculty, staff and visitors is of vital concern to Northwestern Michigan College. Everyone in the campus community is involved in creating a safe environment and is encouraged to report all safety concerns by calling campus security, (231) 883-9099. Emergency outdoor phones are identified by a blue light; all incidents will be documented and investigated. NMC has a staff of campus security personnel who work closely with the Traverse City Police Department. On a regular basis, information and presentations are made available to students and employees on issues of importance to campus safety. The campus safety report is published in the Registration Guide each semester and is in compliance with the Student Right-to-Know and Campus Security Act. Visit www.nmc.edu/safety to view a daily crime log. Click on crime log.

Campus Safety Report

Mission: to establish a system of communication and response to provide for the safety of students and employees.

A. Report Procedures: To report criminal actions, emergencies, or suspicious situations, call:
   Emergencies........................................................................911
   Campus Security..................................................(231) 883-9099

   Emergency outdoor phones are identified by a blue light and can be used to make on-campus calls. To make an emergency call, press the red button, state your location and the situation. Police personnel will respond.

B. Access to Campus Facilities: All campus buildings are open from 7 a.m. to 10 p.m., Monday through Friday, and at other times on weekends depending on need. Residence halls are open from 7 a.m. to 12 midnight every day. Residents have keys and guests are required to register with the residence hall staff after midnight. All guests must be escorted by the resident they are visiting.

C. Authority of Institutional Security Personnel: The NMC Campus Security personnel have the authority to confront the individuals related to an incident, require identification, and when necessary, contact the Traverse City Police Department. Officers keep a daily record of activities and all incidents are promptly reported to the Campus Liaison Officer.

D. Information Programs: On a regular basis students and employees receive information on campus security and crime prevention and are invited to attend presentations on such subjects as sexual assault and rape; fire prevention; crime prevention; bomb threats; and alcohol and drug abuse prevention.

E. Occurrence Statistics: The NMC Campus Security and Safety Department has compiled these statistics for incidents on NMC’s four campuses from January 1, 2015 to December 31, 2015. Go to www.nmc.edu/security to view statistics for the past three years.

Offenses On Campus

<table>
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<th>On Campus</th>
<th>R</th>
<th>On Campus Residential</th>
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</table>
The Michigan State Police make available the list of registered sex offenders at www.michigan.gov/msp select “Michigan Sex Offender Registry.”


**Drug-Free Learning Environment Policy**
It is the intent of Northwestern Michigan College to provide a drug-free workplace and learning environment for students, faculty and staff. Furthermore, NMC intends to comply with the provisions of the Drug-Free Schools and Communities Act of 1989. All students, employees, and visitors are expected to observe all federal, state and local laws and college regulations governing the use and possession of alcohol and illicit drugs. All students, employees and visitors are specifically forbidden to use or possess alcoholic beverages, or to be under the influence of any controlled substance while on college property (except as provided by policy for use of alcohol on campus) or violate conditions of Controlled Substance Act.

**Tobacco-Free Policy**
In the interest of providing a safe, clean and healthy environment for students, employees and visitors, NMC has prohibited smoking on all campuses.

**Student Sexual Assault Policy**

**I. Legal and Behavioral Definition of Sexual Assault**
Northwestern Michigan College (NMC) prohibits sexual misconduct, which includes but is not limited to: rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, and domestic violence. Sexually violent acts, termed sexual misconduct by NMC are violations of NMC’s Student Rights & Responsibilities, and can be crimes as well. All reported incidents will be investigated and, if necessary, disciplinary sanctions will be imposed. Procedures detailing the investigation and resolution processes of NMC can be found online: www.nmc.edu/policies (D-602.05 - Student Sexual Assault).

**II. Reporting Sexual Assault**
The following campus offices may be contacted to report a sexual assault:
- Vice President of Enrollment Management and Student Services.................(231) 995-1046
- Office of Residence Life.......................(231) 995-1400
- Office of Student Life......................... (231) 995-1118
- Student Health Services......................(231) 995-1256
- Local law enforcement........................................911
- Campus Safety and Security...............(231) 995-1111

The option of reporting to a supervisor in any discipline or department is also available.

**Family Educational Rights & Privacy Act**
The Family Educational Rights and Privacy Act (FERPA) helps protect the privacy of student records. The Act provides for the right to inspect and review educational records, the right to seek to amend those records and to limit disclosure of information from the records. Institutions may disclose information on a student without violating FERPA through what is known as “directory information.” Directory information includes the student’s name, address, telephone number, e-mail address, date and place of birth, major field of study, participation in officially recognized activities, enrollment status, dates of attendance, degrees and awards received. Questions about student records may be directed to the Registrar. Go to www.nmc.edu/records for more information.

**Privacy Statement**
In order to improve the instruction offered at Northwestern Michigan College and to meet the requirements of the Carl D. Perkins Vocational and Technical Education Act, Section 113 and the Workforce Investment Act of 1998, Section 122, we will be using your Social Security Number in order to compile summary reports. Section 113 of the Carl D. Perkins and Technical Education Act, 20 USC 2323, and section 122 of the Workforce Investment Act of 1998, 29 USC 2842, requires Northwestern Michigan College and the State of Michigan to assess the effectiveness of vocational and technical education programs aimed at training, placement, and retention of students in employment. Although these laws require that performance reports be compiled based on wage record information, neither law requires students to give their social security numbers (SSN) to the college.

Northwestern Michigan College reports currently enrolled student status to the National Student Clearinghouse each semester. This information is provided to assist students to defer repayment of student loans during the time a student is enrolled. Information is also provided to verify degrees earned and may be used by potential employers who contact the National Student Clearinghouse. Students may access the Clearinghouse website through NMC's secure website to obtain verification of their student status to be used for insurance purposes.
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President  
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B.B.A., Davenport University

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M.A., University of Connecticut  
B.A., Adelphi University  
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Marguerite C. Cotto  
Vice President for Lifelong and Professional Learning  
M.S., Michigan State University  
Advanced Study, Institute for Advanced Studies of Puerto Rico and the Caribbean  
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Victoria L. Cook  
Vice President of Finance and Administration  
M.B.A., Lawrence Technological University  
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Ph.D., M.A., Michigan State University  
B.A., Cornerstone University

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M.B.A., University of Alaska Southeast  
B.S., State University of New York Maritime College

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B.A., University Maryland College Park

Joy Evans  
Executive Director of Research, Planning and Effectiveness  
M.A., University of Pittsburgh  
B.A., Baylor University  
B.S., Bellevue University  
A.A.S., McLennan Community College

Eugene A. Jenneman  
Executive Director of NMC Dennos Museum Center  
B.S., University of Wisconsin

Rebecca M. Teahen  
Executive Director of Resource Development and Foundation  
Certified Fund Raising Executive (CFRE)  
B.A., Michigan State University

Mark D. Liebling  
Executive Director of Human Resources  
M.L.I.R., B.S., Michigan State University

Todd C. Neibauer  
Executive Director of Learning and Resources Technologies  
M.C.T.E., Ferris State University  
B.A., Michigan State University  
B.S.E., Ohio State University
Administrative and Professional Staff

Bachman, Anna L.
Senior Programmer/Analyst and Solution Architect
B.S.E.E., Purdue University

Bailey, Crystal D.
Operations Manager - Hagerty Center
B.A.A., Davenport University
A.S.A., Northwestern Michigan College

Bailey, Edward P.
Director of Technical Academic Area
B.S., Michigan State University

Barnes, Jenny L.
Curriculum and Scheduling Coordinator
B.S., Ferris State University
A.A.S., Northwestern Michigan College

Baumeler, Leanne R.
Disability Support Services Specialist
B.S.W., Ferris State University

Beeker, Mary L.
Librarian
M.A., B.A., Ohio State University

Bennett, Marcus A.
Director of Residence Life and Judicial Affairs
M.A., Saginaw Valley State University
B.S., Wingate University

Bensley, James S.
Director of Outreach Services
M.L.S., Eastern Michigan University
B.S., Western Michigan University

Berlin, Linda L.
Student Financial Services Coordinator
B.A., Concordia University

Biolchini, John M.
Manager of Great Lakes Maritime Academy
Continuing Education
Licensed Merchant Marine Officer
B.S., A.A.S., Northwestern Michigan College

Boike, Lisa A.
Programmer/Analyst
B.A., Alma College

Bloye, Alexander I. G.
Chief Flight Instructor
Certified Flight Instrument Instructor (CFII)
Multiengine Instructor (MEI)
B.S., Michigan State University

Burns, Amy M.
Experiential Learning Program Coordinator
M.Ed., Grand Valley State University
B.F.A., Aquinas College

Carmickle, Laura J.
Senior Programmer/Analyst and Solution Architect
B.B.A., Eastern Michigan University

Claerhout, Cathryn M.
Director of Admissions
M.S., B.S.W., Ferris State University

Cobb, Jeffrey S.
Director of Music Programs
M.M., Oakland University
B.M.U., Western Michigan University

Coffia, Betsey L.
Director of Alumni Relations
B.S.W., Ferris State University
A.S.A., Northwestern Michigan College

Conners, Jack M.
Auditorium Manager
B.A., Spring Arbor University
A.A.S., Delta College

Crawford, Jack David
Specialist - OPEN Learning Center
B.S., B.S., A.A.S., Ferris State University

Cron-Huhta, Patricia A.
Front-of-the-House Coordinator - Great Lakes Culinary Institute
B.A., Michigan State University

Cunningham, Donald C.
Director of University Center
B.S., University of Maryland, University College

Dake, Jason D.
Curator of Education
M.A., University of Michigan
B.S., Central Michigan University

Dalquist, David J.
Intranet Coordinator
M.L.S., University of Michigan
B.S., A.A.S., Michigan Technological University

Darga, Ashley M.
Coordinator for Student Success
M.A., Kent State University
B.A., Western Michigan University

DeCamillis, Susan L.
Director of Business Academic Area and NMC Academic Affairs
Ed.D., B.S., Ferris State University
M.L.S., Eastern Michigan University
A.C., Alpena Community College

DeWalt, Hollie R.
Toral Rewards Coordinator
M.S., Central Michigan University
B.S., University of Maryland University College

Dickinson, Lindsey C.
Director of Advising
M.Ed., Arizona State University
B.A., University of Virginia
A.A., Northwestern Michigan College

Dix, Stephen C.
Analyst-Network Systems and Data Communications
B.A., Baker College
A.A.S., Ferris State University

Doyal, Julia A.
Program Coordinator - Extended Educational Services
B.A., Saint Mary's College

Drerer, Robert B.
Assistant UAS
Certified Flight Instructor (CFI)
A.A.S., Northwestern Michigan College

Druskovich, Judith A.
Admissions Specialist - Great Lakes Maritime Academy
B.S., Michigan State University

Fagerstrom, Victoria L.
Nursing Lab Manager
M.S.N., Walden University
A.D.N., Northwestern Michigan College

Fairbank, Scott
Director of Maritime Admissions
B.A., University of Michigan

Fraizer, Heather J.
Training Specialist
Ph.D., M.A., University of Colorado
B.A., Albion College

Friedgen, Shannon J.
Great Lakes Culinary Institute Admissions Specialist
B.S., Michigan State University
A.A.S., Northwestern Michigan College

Geht, Ann E.
Librarian
M.S., University of Illinois
B.A., Macalester College

Gentry, Daniel E.
Director of Administrative Systems
B.S., Indiana Wesleyan University
A.A.S., Indiana Vocational Technical College

Goodchild, Daniel R.
Coordinator/Instructor – Construction Technology
Master Electrician, State of Michigan
B.S., Grand Valley State University
A.A.S., Northwestern Michigan College

Greiner, Rhonda L.
Bookstore Manager
A.A.S., Northwestern Michigan College

Gustafson, Teresa M.
Director of Educational Media Technologies
Ph.D., M.A., B.A., Michigan State University

Harris, Fern Kay
Instructional Designer
Ed.D., M.A., B.S., Central Michigan University

Haselton, Dean C.
Beverage Manager/Great Lakes Campus Purchasing Coordinator
A.A.S., Northwestern Michigan College

Hazelwood, Constanza C.
Water Studies Institute Education and Outreach Coordinator
Ph.D., M.A., Michigan State University

Heator, Megan N.
Dennos Museum Operations Manager
B.S., Grand Valley State University

Heffner, Brian D.
Director of Police Academy
M.L.S., Eastern Michigan University
M.S., B.S.B., Ferris State University
A.A.S., A.A.S., Northwestern Michigan College

Herzberg, Scott A.
POC Military and Veterans Services/Advisor
B.S., Northern Michigan University

Hess, Heather N.
Talent Acquisition Specialist
B.S., Bently College
A.A.S., Casper College

Hines, Eric C.
Radio Station Manager
B.A., Lafayette College
Hodek, Lori L.
Talent Acquisition Specialist
Professional in Human Resources (PHR), Human Resources Certification Institute
Talent Acquisition Specialist (TAS), Human Capital Institute
B.A., Davenport University
A.A.S., Northwestern Michigan College
Hughes, Martin W.
Chief Engineer - T/S State of Michigan - Great Lakes Maritime Academy
B.A., Saint Lawrence University
A.A.S., A.A.S., Northwestern Michigan College

Labour, Frank E.
Assistant Chief Flight Instructor
Multiengine Instructor (MEI)
Ground Instructor (GRI)
Certified Flight Instrument Instructor (CFII)
Certified Flight Instructor (CFI)
A.A.S., A.A.S., Northwestern Michigan College

Jackson, Kristina B.
Administrative Coordinator - President’s Office
M.A.T., Earlham College
B.S., Guilford College

Jacobson, Joshua J.
Admissions CRM Recruiter
B.S., Cornerstone University

Jacobson, Renee R.
Director of Health Services
Licensed Family Nurse Practitioner
M.S.N., Michigan State University
B.S.N., Northern Michigan University

Kahler, Karen L.
Associate Dean of Learning Services
Ph.D., M.A., B.S., Michigan State University

Kellman, Stephen A.
Coordinator of Web Content and Online Strategies
B.A., Colgate University

Klei, Amy L.
Programmer/Analyst
B.B.A., Western Michigan University

Kolak, Paul A.
Counselor
Licensed Professional Counselor (LPC)
M.A., Western Michigan College
B.A., Calvin College

Krum-Wilmeth, Lisa J.
Specialist - Records
B.A., Michigan State University

Kucera, Rita A.
Executive Administrative Assistant
A.C., Henry Ford Community College

LaCourse, Peter W.
Coordinator - Physical Education
B.S., Central Michigan University

Laughlin, Frederick L.
Director of Great Lakes Culinary Institute
M.S., SUNY College Potsdam

Laursen, Alan P.
Enrollment Specialist - Aviation
M.B.A., Embry-Riddle Aeronautical University
B.S., United States Air Force Academy

Law, Angela J.L.
Coordinator of Data Reporting and Analysis
M.A., B.A., Michigan State University

Loffler, Donald G.
Purchasing Manager
B.S., Ferris State University

Maison, Deborah L.
Advisor - Academic/Career
M.A., Western Michigan University
B.A., Spring Arbor University

Martin, Paul A.
Analyst - Network Systems and Data Communications
B.S., DeVry University
A.A., Hillsborough Community College

McCall, Cathy J.
Administrative Services Coordinator
A.A.S., Rose State College

McGuiness, Joseph C.
Master, Training Ship, State of Michigan
M.B.A., Embry - Riddle Aeronautical University
B.S., U.S. Coast Guard Academy

Molmen, Lisa C.
Programmer/Analyst
A.A.S., Northwestern Michigan College

Moody, Wayne A.
Program Coordinator - Automotive Master Certification, National Institute for Automotive Service Excellence
Master Auto Mechanic, State of Michigan

Morrison, Kyle R.
Coordinator for Media and Instructional Technology
A.A., Kirtland Community College

Morse, Paris E.
Director of Development
B.A., Hope College

Mulder, Craig
Database and Prospect Research Specialist
M.L.S., University of Michigan
B.S., Central Michigan University

Nash, Taylor M.
Advisor - Academic/Career
M.S.W., Eastern Washington University
B.A., Western Michigan University

Noga, Cari L.
Writer/Public Relations Specialist
B.A., Marquette University

O’Keefe, John M.
Chief Flight Instructor
Certified Flight Instructor (CFI)
Certified Instrument Flight Instructor (CFII)
Multiengine Instructor (MEI)
B.B.A., Davenport University
A.A.S., Northwestern Michigan College

Paulemo, Pamela B.
Director of Financial Aid
Certificate in Executive Leadership, Regis University
M.S., Regis University
B.A., Union Institute & University

Patterson, Debra A.
Event Scheduler
A.A.S., Northwestern Michigan College

Poertner, Michelle L.
Program Manager - Tutorial Services
M.A., Michigan State University
B.S., Ferris State University
A.A.S., Northwestern Michigan College

Queen, Jr., William W.
Program Coordinator - Extended Educational Services
B.S., Central Michigan University

Racine, Linda B.
Director of Program Advancement
M.A., B.A., Ball State University

Rocheleau, Carl L.
Chief UAS
Certified Flight Instructor (CFI)
Certified Instrument Flight Instructor (CFII)
B.B.A., Davenport University

Rokos, Judith A.
STCW Clerk and Sea Project Specialist
A.A.S., Northwestern Michigan College

Rollin, Lisa K.
Grant Coordinator - Training Services
B.S., Ferris State University
A.A.S., Northwestern Michigan College

Ruedinger, Karen M.
Coordinator of Research and Market Understanding
M.B.A., University of Michigan
B.A., Alma College

Ruszel, Christine K.
Assistant Controller
B.S., Ferris State University
A.A.S., Northwestern Michigan College

Schenkelberger, Chad M.
Hagerty Center Assistant Director
B.B.A., Western Michigan University

Schmidt, Laura A.
Director of Nursing Programs
Post Master Certificate
D.N.P., Saint Louis University
Family Nurse Practitioner (FNP), Grand Valley University
M.S.N., Northern Michigan University
B.S.N., A.D.N., Gwynedd - Mercy College

Schultz, Kim E.
Advisor - Academic/Career
M.A., Oakland University
M.S., B.A., Wayne State University

Scott, Kenneth J.
Training Specialist - Manufacturing/CNC
B.S., University of Wisconsin-Milwaukee

Sedlacek, Stephen P.
Assistant Engineer - Motor,
Great Lakes Maritime Academy
Licensed Merchant Marine Officer
Chief Engineer of Steam, Motor or Gas Turbine Vessels of any Horsepower
A.A.S., Northwestern Michigan College

Smith, Jason M.
International/Domestic Recruiter and Advisor
M.A., Marygrove College
B.A., Spring Arbor University
Streeter, Neil A.
  Database Administrator

Sullivan, Cheryl A.
  Controller
  Certified Public Accountant (CPA)
  B.S., Central Michigan University

Tafelsky, Gwen M.
  Simulation Lab Coordinator
  M.S.N., Michigan State University
  B.S., Ferris State University
  A.D.N., Northwestern Michigan College
  A.A., Davenport University

Tarnow, Terry L.
  Museum Store Manager
  B.A., Wayne State University
  A.A., University of Arkansas

Thomas, Lisa J.
  Associate Dean of Student Life
  M.S.W., Western Michigan University
  B.A., Calvin College

Thompson, Cortnie K.
  Associate Supervisor - Residence Life
  B.A., Saginaw Valley State University

Thornton, Allison B.
  Coordinator of Technology Support Services
  B.A., The American University

Tilson, Lynn M.
  Training Specialist
  M.A., Ball State University
  B.S., Aquinas College

Turner, Bryce E.
  Analyst - Network Systems and Data Communications
  B.S., Ferris State University

Ulrich, Tina J.
  Director of Library Services
  M.L.S., Indiana University
  B.A., Goshen College

Ursell, Steven E.
  International Aviation Instructional Coordinator
  Certified Flight Instrument Instructor (CFII)
  M.B.A., Davenport University
  A.A.S., Northwestern Michigan College

VanSumeren, Hans W.
  Director of Great Lakes Water Studies Institute
  M.S., B.S., University of Michigan

Vaughn, Eileen E.
  Programmer/Analyst
  B.S., Baker College

Voight, Hillary E.
  Design, Marketing and Technology Specialist - Extended Educational Services
  B.S., Grand Valley State University

Wallace, Elizabeth R.
  TCAPS Early College/NMC Commitment Coordinator
  B.S., Ohio State University

Ward, Megan M.
  Writing Center Coordinator
  M.A., Miami University
  B.A., Grand Valley State University

Wasson, Daniel P.
  Department Director of Systems and LAN Management
  B.S., DeVry Institute of Technology

Westphal, Kelly J.
  Payroll and Benefits Specialist
  B.S.W., Ferris State University
  A.A.S., A.S.A., Northwestern Michigan College

Williams, Elizabeth B.
  Business Development Specialist

Wolin, Richard R.
  Director of Training Services
  M.B.A., Wayne State University
  B.B.A., Davenport University
  A.A.S., Gogebic Community College

Young, Megan P.
  Coordinator - Graphics and Printing Services
  B.S., Central Michigan University

Zurek, Katharine R.
  Annual Giving Specialist
  M.S.W., B.A., University of Michigan

Faculty

Anderson, Kimberly K.
  Health Occupations Instructor
  D.C., National University of Health Sciences
  M.S.N., Walden University
  B.S.N., Grand Valley State University
  A.A.S., Kalamazoo Valley Community College

Anderson, Michael W.
  Communications Instructor
  M.A., University of Colorado
  B.A., Western Michigan University
  A.A., Northwestern Michigan College

Bajema, David J.
  Automotive Instructor
  Master Certification, National Institute for Automotive Service Excellence
  Master Auto Mechanic, State of Michigan

Beeker, Norman J.
  Health Occupations Instructor
  M.S., Miami University
  M.S.N., Gonzaga University
  B.A., Michigan State University
  A.D.N., Northwestern Michigan College

Berman, Jack A.
  Science/Math Instructor
  Advanced Study, Clarkson University
  M.A., B.S., University of Michigan

Blackford, Lisa A.
  Social Sciences Instructor
  M.S.W., Michigan State University
  B.S., Lake Superior State University

Bloomquist, Cheryl M.
  Social Sciences Instructor
  M.A., Michigan State University
  B.S., Western Michigan University

Burget, Mary L.
  Science/Math Instructor
  M.S., Virginia Polytechnic Institute and State University
  B.A., Indiana University
  B.A., University of Northern Iowa
  A.A., North Iowa Area Community College

Burks, Shawn C.
  Culinary Arts Instructor
  M.A., Spring Arbor University
  B.A., Albion College
  A.O.S., Culinary Institute of America

Butler, Nathan A.
  Science/Math Instructor
  M.S., The University of Vermont
  B.S., Ferris State University
  A.S.A., Northwestern Michigan College

Chu, Judy Y.
  Communications Instructor
  M.A., University of Chicago
  B.A., University of California, Los Angeles

Collins, Alison B.
  Health Occupations Instructor
  M.S., B.S., Ferris State College
  A.S., Northwestern Michigan College
  Certified Dental Assistant (CDA)

Compton, Gerald G.
  Science/Math Instructor
  M.S., B.A., Oakland University

Coughlin, Christopher J.
  Science/Math Instructor
  M.S., B.S., Michigan Technological University

DePauw, Devan M.
  Welding Instructor
  B.S., A.A.S., Ferris State University

Dobek, Gerald O.
  Science/Math Instructor
  M.Sc. (Hons.) University of Western Sydney
  B.S., Trinity College
  B.S., Ferris State University
  A.A., A.S., Northwestern Michigan College

Dohm, Lisa M.
  Communications Instructor
  M.A., Central Michigan University
  M.A., B.A., Michigan State University

Domine, Douglas E.
  Humanities Instructor
  B.F.A., Michigan State University
  A.A., Southwest Michigan College

Drake, Stephen D.
  Science/Math Instructor
  M.A., Kansas State University
  M.S., University of Wyoming
  B.S., Northwest Missouri State University

East, Ernest L.
  Science/Math Instructor
  M.A., Oakland University
  B.S., University of Michigan Dearborn

Elliott, Mary Jo
  Science/Math Instructor
  Ed.M., State University of New York
  B.S., Michigan Technological University

Emerson, Michael P.
  Communications/Humanities Instructor
  Ph.D., Purdue University
  M.A., B.A., University of Utah

Even, Brandon R.
  Social Sciences Instructor
  M.A., B.S., Central Michigan University
Faculty & Staff

Fewins, Nicole S.  
Business Instructor  
M.B.A., Lewis University  
B.S., Ferris State University  
B.S., Michigan Technological University

Firestone, Tanya M.  
Communications Instructor  
M.A., University of Dayton  
B.A., Miami University

Franklin, Michael R.  
Science/Math Instructor  
Ph.D., M.S., Michigan State University  
B.S., Murray State University

Gillett, Michael L.  
Science/Math Instructor  
M.S., Capella University  
B.S., Kettering University

Goethals, Scott P.  
Business Instructor  
M.S., B.S., A.A.S., Ferris State University  
A.A.S., Northwestern Michigan College

Gordon, Thomas A.  
Humanities Instructor  
M.A., Fort Hays State University  
B.A., California Polytechnic State University  
A.A., Cuesta Community College

Gray, Nancy T.  
Communications Instructor  
M.A., Middlebury College  
B.A., University of Michigan

Hamilton, Robert B.  
Communications Instructor  
M.A., B.A., Central Michigan University

Hendrix, Josephine L.  
Health Occupations Instructor  
M.S.N., Michigan State University  
B.S.N., Saginaw Valley State University  
A.A.S., Lake Michigan College

Hochscheidt, Michael W.  
Maritime Instructor  
Licensed Merchant Marine Officer, Third Assistant  
B.A., Wayne State University  
A.A.S., Northwestern Michigan College

Hosler, David C.  
Business Instructor  
Certified Computer Technician  
B.S., Ferris State University  
A.A.S., Northwestern Michigan College

Houston, Robb E.  
Science/Math Instructor  
M.A., Rice University  
B.S., Central Michigan University

Howard, Sherry L.  
Business Instructor  
M.S., B.S., Ferris State University  
A.A.S., Northwestern Michigan College

Howell, Mark D.  
Communications Instructor  
Ph.D., Bowling Green State University  
M.A., B.A., Penn State University

Jacobson, Michael W.  
Science/Math and Social Sciences Instructor  
M.A., Western Illinois University  
B.S., Northern Michigan University

Jaquish, Laura L.  
Science/Math Instructor  
M.S., B.S., Michigan State University

Jenkins, Anthony L.  
Science/Math Instructor  
M.S., Michigan State University  
B.S., Manchester College

Jones, Bronwyn R.  
Communications Instructor  
M.A., Hunter College  
B.A., Columbia University

Kelly, Keith E.  
Business Instructor  
B.S., Lake Superior State University

Key, Blake D.  
Science/Math Instructor  
Ph.D., Michigan State University  
M.S., B.S., Western Michigan University

Khan, Amjad A.  
Social Sciences Instructor  
Ph.D., Oklahoma State University  
M.S., New Mexico State University

Klotzbach, Gary W.  
Business and Humanities Instructor  
J.D., University of Colorado School of Law  
B.A., Michigan State University

LaCross, Gregory  
Science/Math Instructor  
M.S., Boston College  
B.S., A.A.S., Ferris State University

Laverne, Carol A.  
Health Occupations Instructor  
M.N., Emory University  
B.S.N., Mercy College

Lively, Janet S.  
Communications Instructor  
M.A., State University of New York  
B.S., Michigan State University

Livengood, Tamella  
Health Occupations Instructor  
B.S.N., Mercy College

Mahoney, Deirdre M.  
Communications Instructor  
Ph.D., University of Arizona  
M.A., B.S., Northern Arizona University

Mason, Robert D.  
Maritime Instructor  
Licensed Merchant Marine Officer  
First Class Great Lakes Pilot’s License  
A.S., Northwestern Michigan College

McCormick, Melissa R.  
Humanities Instructor  
M.A., University of Missouri-Columbia  
B.S., Ball State University

McDonald, Kristy B.  
Business Instructor  
M.A., Eastern Michigan University  
B.A., The University of Montana

McKee, Carole  
Health Occupations Instructor  
M.S., University of Michigan  
B.S.N., The University of Akron

Minor, Benjamin T.  
Maritime Instructor  
Licensed Merchant Marine Officer  
B.S., University of Oregon  
A.A.S., Northwestern Michigan College

Nelson, James D.  
Science/Math Instructor  
M.A., University of Idaho  
B.S., Ferris State University  
A.A., Northwestern Michigan College

Nelson, Mark D.  
Science/Math Instructor  
M.Ed., B.S., University of Illinois

Olshove, Sonja K.  
Social Sciences Instructor  
M.A., Wake Forest University  
B.A., Michigan State University  
A.A., Northwestern Michigan College

Overbaugh, Keith E.  
Science/Math Instructor  
D.V.M., B.S., Michigan State University

Owens, Jay Barclay  
Communications Instructor  
Ph.D., Washington State University  
M.A., B.A., Central Washington University

Papcun, Joel  
Culinary Arts Instructor  
Certified Culinary Educator (CCE)  
Certified Executive Chef (CEC)  
Certified Chef de Cuisine (CCC)  
A.A.P.S, Schoolcraft College

Parshall, Nancy J.  
Communications Instructor  
M.Ed., Temple University  
B.A., Albion College

Peplinski, Nathan G.  
Science/Math Instructor  
Ph.D., B.S., Western Michigan University

Pflugheft, John R.  
Science/Math Instructor  
M.S., University of Wisconsin  
B.S., Colorado State University

Pharo, Debra A.  
Science/Math Instructor  
M.A., University of Northern Colorado  
B.S., Texas A&M University

Press, James G.  
Humanities Instructor  
M.A., Central Michigan University  
B.A., Lake Superior State University

Regier, Christopher A.  
Construction Technology Instructor  
B.S., A.A.S., Wayland Baptist University  
A.A.S., A.A.S., Air University – Community College of the Air Force

Rice, Steven H.  
Business Instructor  
M.A., Wheaton College  
M.S., Boston College  
B.S., University of Delaware

Rodriguez, Robert A.  
Culinary Arts Instructor  
Certified Executive Chef, CEC  
A.A.S., Northwestern Michigan College

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Rokos, Jean M.
Health Occupations Instructor
M.S.N., Wayne State University
B.S.N., University of Michigan
A.D.N., Northwestern Michigan College

Ross, Mark G.
Communications Instructor
Ph.D., M.A., Ohio State University
B.A., Michigan State University

Roster, Nicholas O.
Science/Math Instructor
Ph.D., Oklahoma State University
M.S., Central Michigan University
B.A., Alma College

Ruane, Sean E.
Social Sciences Instructor
M.A., Pepperdine University
B.A., State University of New York
A.A.S., Onondaga Community College

Salathiel, Kristen M.
Communications Instructor
M.A., Central Michigan University
M.A., B.A., University of Michigan

Schaefcr-Hills, Caroline L.
Humanities Instructor
M.A., The Savannah College of Art and Design
B.F.A., Center for Creative Studies

Schwarz, Matthew R.
Technical Instructor
A.A.S., Northwestern Michigan College
A.A., Columbia College

Skarupinski, Michael T.
Culinary Arts Instructor

Slade, Jason S.
Technical Instructor
M.S., B.S., Michigan State University

Smith, Alexandra C.
Humanities Instructor
B.F.A., College for Creative Studies
B.A., Michigan State University

Smith, Marjory M.
Communications Instructor
M.A., Michigan State University
M.A., University of Edinburgh

Spenkle, Melissa P.
Communications Instructor
Ph.D., M.A., University of Tennessee

Swan, Scott J.
Geographic Information Systems Instructor
M.S., B.S., B.S., University of Michigan

Surigalski, Michael J.
Maritime Instructor
STCW95
Masters License Great Lakes
Masters License Ocean
B.S., Wayne State University
A.S., Northwestern Michigan College

Torre, Michael D.
Humanities Instructor
M.F.A., Indiana University
B.S., West Virginia Institute of Technology

Traines, David P.
Aviation Instructor
Certified Flight Instrument Instructor (CFII)
Multiengine Instructor (MEI)
Air Transport Pilot (ATP)
B.S., Johnson State College

Vanderkolk, Mary D.
Health Occupations Instructor
M.S.N., Wayne State University
B.S., B.S.N., Michigan State University

Velis, John E.
Business Instructor
B.S., Michigan Technological University

Verschaeve, Joseph M.
Social Sciences Instructor
M.A., Michigan School of Professional Psychology
B.S., Central Michigan University

Walter, Linda A.
Health Occupations Instructor
M.S.N., Grand Valley State University
B.S.N., A.D.N., Ferris State University
L.P.N., Mercy School of Practical Nursing

Wangler, Sara J.
Communications Instructor
M.F.A., Oklahoma State University
M.A., Northern Michigan University
B.A., Saginaw Valley State University

Weber, Keith J.
Business Instructor
M.S., B.A., California State University
A.A., Santa Ana College

Wilczewski, Rachel A.
Social Sciences Instructor
Ph.D., Michigan State University
B.A., Aquinas College

Wilson, Ryan M.
Communications Instructor
M.F.A., University of Massachusetts
M.A., DePaul University
B.S., Ohio University

Wooters, Rebecca L.
Health Occupations Instructor
Certified Dental Assistant (CDA)
Registered Dental Assistant (RDA)
B.S., Ferris State University
A.A.S., Northwestern Michigan College

Zachman, John R.
Social Sciences Instructor
Ph.D., M.A., Duke University
B.A., Michigan State University

Zlojutro, Jane M.
Business Instructor
Certified Public Accountant (CPA)
M.S.T., Grand Valley State University
B.B.A., Western Michigan University

Emeritus Faculty
The following faculty members have retired with twenty or more years of service.

Glen Anderson 1959-85
Norman Averill 1966-96
Stephen Ballance 1975-00
Pauline Baver 1951-75
Elaine Beardslee 1963-94
Walter Beardslee 1951-85
Jay Beery 1981-12
Joan Berg 1977-00
Lyle Bradford 1968-88
Robert Buttlemen 1970-06
Larry Buys 1970-01
Elizabeth Carden 1970-00
Larry Carps 1971-01
Richard Cookman 1970-00
Helen Core 1952-74
James Coughlin 1987-15
Sharon Dean 1965-92
Joseph Dionne 1971-06
Kathleen Donnelly 1961-85
David Donovan 1971-01
Sallie Donovan 1975-06
Diane Emling 1987-15
William Faulk 1965-01
Adam Gahn 1963-01
Ernest Gaunt 1952-77
Richard Gertz 1968-88
Richard Goerz 1970-00
Michele Grooters 1977-01
Alan Hart 1987-14
Jill Hinds 1979-04
Lucille House 1991-15
Karen Howie 1987-10
Constance Jason 1980-12
Dianne Keelan 1974-01
Francis Kullman 1968-96
John Leishman 1968-94
Mary Ann Linsell 1979-14
Loretta Lockman 1964-84
William Long 1965-88
David Loveland 1973-94
Keith MacPhee 1962-96
Kenneth Marek 1968-01
Kenneth Masck 1975-02
Regis McCord 1986-15
Michael McIntosh 1970-04
Richard Minor 1972-00
Hettie Molvang 1974-94
Henry Morgenstein 1971-00
Arlo Moss 1962-88
Peter Nelson 1964-88
Ray Niergarth 1979-10
Mary Norris 1982-12
Harry Oliver 1958-89
Jack Ozegovic 1968-89
John Pahl 1966-13
Richard Pascoe 1966-88
Anne Patrick 1984-07
Adjunct Faculty

**Assendelft, Barbara A.**  
Social Sciences Instructor  
J.D., Detroit College of Law  
B.A., Michigan State University  
A.A., Macomb Community College

**Auch, Thomas F.**  
Humanities Instructor  
M.A., Michigan State University  
B.S., Colorado State University

**Baker, Cyril C.**  
Technical Instructor  
Michigan Motor Vehicle Mechanic Certification

**Ballance, Stephen J.**  
Humanities Instructor  
M.A., Ohio University  
B.A., Michigan State University

**Baumeler, Leanne R.**  
Communications Instructor  
B.S.W., Ferris State University

**Beaver, Ryan L.**  
Business Instructor  
B.S., Ferris State University

**Beeby, George W.**  
Business Instructor  
J.D., Wayne State University Law School  
B.S., Michigan Technological University

**Bensley, James S.**  
Humanities Instructor  
M.I.S., Eastern Michigan University  
B.S., Western Michigan University

**Bernstein, Ryan B.**  
Communications Instructor  
M.A., University of Denver  
B.A., Western Michigan University

**Biologicini, John M.**  
Maritime Instructor  
Licensed Merchant Marine Officer  
B.S., A.A.S., Northwestern Michigan College

**Borkovich, Michael L.**  
Social Sciences Instructor  
B.S., Michigan State University  
A.A., Mott Community College  
A.A., Lansing Community College

**Brumbaugh, Patricia J.**  
Humanities Instructor  
M.M., University of Michigan  
B.A., Oliver College

**Cannon, Nelson J.**  
Social Sciences Instructor

**Capron, David C.**  
Science/Math Instructor  
M.A., Central Michigan University  
B.S., Michigan State University

**Capserson, Leslie K.**  
Health Occupations Instructor  
M.S.N., Walden University  
B.S.N., Western Michigan University

**Cataldo, Horace P.**  
Technical Instructor  
B.S., A.S., Ferris State University

**Cochran, Michael L.**  
Social Sciences Instructor  
B.S., Grand Valley State University  
A.S., Grand Rapids Community College

**Connors, Jack M.**  
Humanities Instructor  
B.A., Spring Harbor University  
A.A.S., Delta College

**Cook, Gary A.**  
Construction Technology Instructor  
Licensed Residential Builder, State of Michigan  
Licensed Architect, State of Michigan

**Cooney, Robert**  
Social Sciences Instructor  
J.D., Detroit College of Law  
B.S., Michigan Technological University

**Crawford, Jack D.**  
Business and Technical Instructor  
B.S.B., B.S.B., A.A.S., Ferris State University

**Cron-Huhta, Patricia A.**  
Culinary Arts Instructor  
B.A., Michigan State University

**Darga, Ashley M.**  
Communications Instructor  
M.A., Kent State University  
B.A., Western Michigan University

**Davis, Michael J.**  
Humanities Instructor  
M.S.E.D., University of Saint Francis  
B.S., Ball State University

**Dawson, James L.**  
Social Sciences Instructor  
M.T.E., Ferris State University  
B.S., Lake Superior State University

**DeMaagd-Formanckyz, Kathryn**  
Social Sciences Instructor  
M.A., B.B.A., Western Michigan University

**Dollar, Thomas W.**  
Technical Instructor

**Drzewiecki, Stephen M.**  
Social Sciences Instructor  
A.A., A.S., Northwestern Michigan College

**Dunn, Timothy M.**  
Maritime Instructor  
Licensed Merchant Marine Officer  
M.S., B.S.B.A., Ferris State University  
A.A.S., Northwestern Michigan College

**Eisenstein, Dorothy B.**  
Humanities Instructor  
M.A., Wesleyan University  
B.F.A., University of Illinois

**Elston, Lee A.**  
Health Occupations Instructor  
M.S., Nova University  
B.S.N., Barry University

**Feinman, Merritt B.**  
Maritime Instructor  
A.A.S., Northwestern Michigan College

**Fitzpatrick, John G.**  
Business Instructor  
M.B.A., Stanford University  
B.A., Denison University

**Friedgen, Shannon J.**  
Culinary Arts Instructor  
B.S., Michigan State University  
A.A.S., Northwestern Michigan College

**Gentry, Ronald W.**  
Humanities Instructor  
M.A., B.A., Wayne State University

**Gottwald, Linda D.**  
Health Occupations Instructor  
D.N.P., Rush University  
M.A., University of California  
M.A., B.S., Eastern Michigan University  
B.S., Samuel Merritt College

**Grenkowicz, Judith A.**  
Social Sciences Instructor  
Ed.D., Northern Illinois University  
M.B.A., University of Detroit Mercy  
B.S., Ferris State University

**Hall, Robert J.**  
Social Sciences Instructor  
A.A., Northwestern Michigan College

**Haselton, Dean C.**  
Culinary Arts Instructor  
A.A.S., Northwestern Michigan College

**Hawkins, Stephanie M.**  
Physical Education Instructor

**Hazelwood, Constanza C.**  
Communications and Water Studies Institute Instructor  
Ph.D., M.A., Michigan State University

**Heffner, Brian D.**  
Social Sciences Instructor  
M.L.S., Eastern Michigan University  
M.S., B.S.B.A., Ferris State University  
A.A.S., A.A.S., Northwestern Michigan College
Klein, Leonard E.
Science/Math Instructor
M.Ed., Wayne State University
M.S., Purdue University
B.A., Oakland University
Kuchris, Christopher G.
Humanities Instructor
M.A., University of Nevada
B.A., DePaul University
LaCourse, Peter W.
Physical Education Instructor
B.S., Central Michigan University
Laughlin, Frederick L.
Culinary Arts Instructor
M.S., Rochester Institute of Technology
B.A., SUNY College - Potsdam
B.A., New York University
Laughlin, Linda
Business and Culinary Arts Instructor
B.A., Empire State University
Laursen, Alan P.
Aviation Instructor
M.B.A., Embry-Riddle Aeronautical University
B.S., United States Air Force Academy
Lincoln, Patricia R.
Communications Instructor
M.F.A., Colorado State University
B.A., Salem College
Lingaur, Alissia R.
Communications Instructor
M.F.A., Bowling Green State University
B.A., Grand Valley State University
Lynch, Bryn A.
Communications Instructor
M.A., Saint Louis University
M.Ed., Aquinas College
B.A., Kalamazoo College
Lyon, Mark E.
Social Sciences Instructor
M.A., Western Michigan University
B.A., Spring Arbor University
Marchenko, Oksana
Humanities and Social Sciences Instructor
B.Ed., Ministry of Education
A.A.S., A.G.S., North Central Michigan College
Mayo, Cilffe E.
Health Occupations Instructor
McCall, Brian D.
Humanities Instructor
M.A., B.S., Central Michigan University
McConnell, Gary J.
Social Sciences Instructor
B.A., Spring Arbor University
McKay, Grant E.
Health Occupations Instructor
B.A., Central Michigan University
B.S.N., Spring Arbor University
A.A., A.D.N., Northwestern Michigan College
McKeon-Jacob, Mary
Communications Instructor
M.Ed., National Louis University
B.S., Illinois State University
Mehl, Douglas K.
Physical Education Instructor
Menchaca, Deborah G.
Technical Instructor
M.A., Marygrove College
B.S., Ferris State University
A.S., Northwestern Michigan College
Monteith, Mary K.
Communications Instructor
M.Ed., B.A., University of Illinois
Moody, Wayne A.
Automotive Instructor
Master Certification, National Institute for Automotive Service Excellence
Master Auto Mechanic, State of Michigan
Morse, Jeffrey W.
Construction Technology Instructor
A.A.S., West Shore Community College
Mortensen-Chown, David K.
Humanities Instructor
B.M.U., Western Michigan University
B.M.U., Michigan State University
Morton, Mindy A.
Humanities Instructor
M.S., Portland State University
B.S., Michigan State University
A.A., Northwestern Michigan College
Murray, Diane L.
Business Instructor
B.A., University of Michigan
Nadji, Taoufik
Science/Math Instructor
Nelson, Lorissa K.
Communications Instructor
M.Ed., University of Phoenix
B.S., Brigham Young University
Niemi, Sam P.
Business Instructor
M.B.A., Lawrence Technological University
B.S., Lake Superior State University
Niemisto, Patrick T.
Humanities Instructor
B.M.E., Northern Michigan University
Novak, Brad H.
Humanities Instructor
Oberlin, Michael B.
Social Sciences Instructor
Ph.D., M.A., B.S., Western Michigan University
O’Connor Heitjan, Mary
Communications Instructor
Odgers, Susan L.
Social Sciences Instructor
Ph.D., M.A., Wayne State University
B.A., Oakland University
Owens, Dianne H.
Communications Instructor
M.Ed., B.A., Central Washington University
Perreault, Michael L.E.
Social Sciences Instructor
J.D., Thomas M. Cooley Law School
A.A.S., A.S.A., Northwestern Michigan College
Phillips, Mark E.  
Maritime Instructor  
Licensed Merchant Marine Officer  
M.S.M.M., Maine Maritime Academy

Poertner, Michelle L.  
Business Instructor  
M.A., Michigan State University  
B.S., Ferris State University  
A.A.S., Northwestern Michigan College

Pulp, Nicholas J.  
Technical Instructor

Rand III, Charles S.  
Communications Instructor  
M.Ed., B.S., University of North Texas

Reisig, Terri  
Communications Instructor  
M.A., Governors State University  
B.A., University of Illinois

Richardson, Rebecca A.  
Science/Math Instructor  
M.A.T., University of Idaho  
B.S., Ferris State University

Robinson, Erin M.  
Health Occupations Instructor  
B.S.N., A.D.N., Gwynedd-Mercy College  
M.S.N., Northern Michigan University  
D.N.P., Saint Louis University  
Health Occupations Instructor

Rocheleau, Carl L.  
Aviation Instructor  
Certified Flight Instructor (CFI)  
Certified Flight Instrument Instructor (CFII)  
B.A.A., Davenport University

Rooks, Sarah C.  
Health Occupations Instructor  
B.S., Ferris State University  
A.A.S., A.D.N., Northwestern Michigan College

Root, Jeremy K.  
Construction Technology Instructor

Samarasinghe, Diane A.  
Physical Education Instructor  
M.S.W., Grand Valley State University  
B.S., Michigan State University

Sanderson, Corey J.  
Humanities Instructor  
B.A., University of Massachusetts, Amherst  
A.S., New England Institute of Technology

Schaub, Adam D.  
Physical Education Instructor

Schindler, Amy K.  
Business Instructor  
M.B.A., University of Michigan  
B.A., Kenyon College

Schmidt, Laura A.  
Health Occupations Instructor  
D.N.P., Saint Louis University  
M.S.N., Northern Michigan University  
B.S.N., A.D.N., Gwynedd-Mercy College

Scollon, Teresa J.  
Communications Instructor  
M.B.A., University of Michigan  
M.F.A., University of Southern Maine  
B.A., Michigan State University

Sears, Laurie M.  
Humanities Instructor  
M.M., B.M.U., Indiana University

Sedlacek, Clifford  
Construction Technology Instructor

Sensenbaugh-Padgett, Sue E.  
Science/Math Instructor  
B.S., Grand Valley State University  
A.A., A.A.S., Northwestern Michigan College

Sheehan, Donald P.  
Business Instructor  
B.S., Ferris State University

Sheerin, Julia J.  
Science/Math Instructor  
B.S., Indiana University

Simkins, Frank A.  
Business Instructor  
A.A.S., Northwestern Michigan College

Smith, Mark R.  
Communications Instructor  
M.A., Central Michigan University  
B.A., University of Edinburgh  
B.A., University of Michigan

Sonnenbend, Elizabeth A.  
Business Instructor  
B.S., Ferris State University

Sorenson, Scot P.  
Humanities Instructor  
Ph.D., M.A., University of Minnesota  
B.A., Luther College

Sprengle, David C.  
Communications Instructor  
M.A., University of Tennessee  
B.A., University of Illinois

Stankovich, Joseph S.  
Business Instructor  
M.A., Central Michigan University  
B.S., Wayne State University

Steele, Susan W.  
Humanities Instructor  
M.M., B.S.E., Northern Illinois University

Stewart, Magdalena A.  
Health Occupations Instructor  
B.S., Ferris State University  
A.D.N., Northwestern Michigan College

Stone, Rachel M.  
Health Occupations Instructor  
B.S.N., Ferris State University  
A.D.N., A.A.S., Northwestern Michigan College

Sullivan, Johnathan J.  
Science/Math Instructor  
M.S., University of Arkansas  
B.S., Michigan Technological University

Sweeney, Brian P.  
Technical Instructor  
M.E., Cornell University  
B.S., United States Military Academy

Szczeczkowski, James  
Science/Math Instructor  
M.A., Eastern Michigan University  
B.A., University of Michigan

Taberski, Carol J.  
Business Instructor  
M.B.A., Lake Superior State University  
B.S., Ferris State University  
A.A.S., Northwestern Michigan College

Taetsch, Michael  
Maritime Instructor  
Licensed Merchant Marine Officer  
A.A.S., Northwestern Michigan College

Tafelsky, Gwen M.  
Health Occupations Instructor  
M.S.N., Michigan State University  
B.S., Ferris State University  
A.D.N., Northwestern Michigan College

Talicska, Marcia L.  
Physical Education Instructor  
M.S., Michigan State University  
B.S., Eastern Michigan University

Tarczon, Phillip G.  
Humanities Instructor

Tarnow, Terry L.  
Physical Education Instructor  
B.A., Wayne State University  
A.A., University of Arkansas

Taylor, Preston L.  
Physical Education and Social Sciences Instructor  
A.A.S., Northwestern Michigan College

Thiel, Angela L.  
Health Occupations Instructor  
M.S.N., University of Michigan  
B.S.N., Fitchburg State College

Tilley, Marilyn K.  
Humanities Instructor  
M.M., Cleveland Institute of Music  
B.M.U., North Carolina School of Arts

Vandenberg, Ethel L.  
Health Occupations Instructor  
M.S.N., Andrews University  
B.S.N., University of Michigan

Vandergriff, Jessica R.  
Science/Math Instructor  
B.S., Lake Superior State University

VanderZee, Larissa S.  
Communications Instructor  
M.A., University of Michigan  
B.A., Alma College

VanSumeren, Hans W.  
Water Studies Institute Instructor  
M.S.E., B.S.E., University of Michigan

Vittorelli, Paul A.  
Physical Education Instructor

Vogel, Dorothy J.  
Humanities Instructor  
M.M., Western Michigan University  
B.M.U., Oberlin College

Waisen, Cheryl L.  
Health Occupations Instructor  
B.S.N., Ferris State University  
A.A.S., A.D.N., Northwestern Michigan College

Walters, Kate E.  
Social Sciences Instructor  
M.S., University of Cincinnati  
B.S., A.A., Ferris State University

Ward, Megan M.  
Communications Instructor  
M.A., Miami University  
B.A., Grand Valley State University

Warfield, Rick A.  
Technical Instructor
Technical and Paraprofessional Staff

Arnold, Judy A.
Financial Aid Specialist

Beer, Alan G.
Technician - Digital Media Systems

Bernstein, Ryan B.
Senior Instructional Technology M.A., Specialist, University of Denver B.A., Western Michigan University

Borstel, Edward B.
Aviation Maintenance Supervisor Licensed Airframe/Power Plant Mechanic A.A.S., Air Force Community College

Carlson, Maureen T.
Publication and Promotion Specialist - Extended Educational Services A.A.S., Air Force Community College

DeLonge, Jr., Robert Mark
Instructional Technology Specialist M.A., B.A., Michigan State University

Denoyer, Susan C.
Office Manager - Great Lakes Maritime Academy

Domagala, Patricia J.
Voice Systems Administrator

Duby, Cynthia L.
Office Manager - Social Sciences Academic Area

Dunn, Jr., Thomas G.
Aviation Maintenance Technician Licensed Airframe/Power Plant Mechanic A.A.S., Kirtland Community College

Eiden, Elizabeth J.
Office Manager - Residence Life

Fitzgerald, Robin R.
Desktop Computer Support Specialist A.A.S., Davenport University

Foster, Samuel R.
Desktop Computer Support Specialist B.A., Central Michigan University

Fox, Margaret L.
Office Manager - Health Occupations Academic Area A.A.S., Northwestern Michigan College

Gallegos, Johanna
Event Supervisor

Garner, Bobbi J.
Office Manager - Science/Math Academic Area A.A.S., Northwestern Michigan College

Glauch, Debra K.
Medical Office Manager - Student Health Services

Gourlay, Kimberly A.
Office Manager - Auxiliary Services B.S., Ferris State University

Grougan, Irina I.
Office Manager - Learning Services B.A., Gomel State University

Hammontree, Rochelle M.
Paraprofessional - Library Services

Hannert, Joelle A.
Library Technical Services Coordinator A.A.S., Oakland Community College

Hanninen, Kim H.
Museum Registrar/Exhibit Preparator B.F.A., Eastern Michigan University

Hansen, Julie A.
Veterans Affairs/Records and Registration Assistant

Hromada, Georgenia R.
Financial Aid Specialist

Malone, Kathryn M.
Financial Aid Specialist B.S., Lake Superior State University A.A.S., A.B.A., Kirtland Community College

Mavis, Sarah E.
Assistant Bookstore Manager B.A., Anderson University

McCall, Carleen A.
Foundation Financial Assistant M.A., Teachers College Columbia University B.A., Albion College

McCauley, Zebulon W.
Desktop Computer Support Specialist - Intermediate

Norconk, Beth A.
Desktop Computer Support Specialist B.S., Ferris State University

Palmer, Donna J.
Executive Assistant - University Center

Penful, Mara F.
Student Life Office Manager A.A.S., Northwestern Michigan College

Robinson, Heather J.
Office Manager - Technical Discipline B.A.S., Davenport University

Root, Janice M.
Office Manager - Communications Academic Area

Rushton-Herrera, Theresa L.
Operations Manager - Aviation

Schneider, Michelle L.
Instructional Technology Assistant A.A.S., Northwestern Michigan College

Schultz, Dennis W.
Technician - Video and Instructional Support Systems

Shumaker, Bonnie J.
Office Manager - Business Academic Area B.A., Ohio State University

Sluss, Alice M.
Office Manager - Humanities Academic Area

Strahan, Trisha J.
Event Supervisor

Trier, Sherry D.
Instructional Technology Specialist A.B.S., Delta College

Waterstripe, Kirk E.
Laboratory Manager M.S., Rutgers State University of New Jersey B.S., Edinboro University of Pennsylvania

Weaver, David H.
Desktop Computer Support Specialist B.S., Western Michigan University

Witt, Dorothy O.
Technician - University Center Publications/Event Scheduling

Support Staff

Crouch, Miku
Assistant-Admissions Office B.A., University of Nagasaki

Deemer, Cindy A.
Records and Registration Assistant M.A., Central Michigan University

Gower, Amanda L.
Resource Development Executive Assistant

Hallett, Kristi E.
Cashier/Bookkeeper - Accounts Receivable A.A.S., Northwestern Michigan College

Haven, Esther
Admissions Financial Aid Office Assistant

Holka, Tracie L.
Assistant - Accounting

Johnson, Jesscia
Financial Aid Office Assistant B.A., Michigan State University A.A.S., Northwestern Michigan College

Lipke, Lindsey M.
Lead Accounting Assistant-Bookkeeper

McCreary, Shayrrl A.
Accounting Assistant/Bookkeeper B.A., Western Michigan University
### Faculty & Staff

- **Moritz, Lynne M.**  
  President’s Office Assistant  
- **Rumbach, Vicki L.**  
  Assistant - Training and Research  
- **Schenk, Jackie A.**  
  Office Assistant - Extended Educational Services  
- **Schoppe, Paul M.**  
  Resource Development Assistant  
- **Shinn, Peggy A.**  
  Accounting Assistant  
- **Steinebach, Kristina A.**  
  Bookkeeper – Accounts Payable  
- **Varga, Anne E.**  
  Public Relations and Marketing Assistant  
  B.A.A., Central Michigan University  
- **West, Mark A.**  
  Lead Accounting Assistant  
- **Williams, Scott A.**  
  Sous Chef - Hagerty Center  
- **Wiseman, Alex D.**  
  Materials Clerk  
- **Woodruff, Amanda L.**  
  Nursing Office Assistant  

### Maintenance and Custodial Staff

- **Angel, Sharon M.**  
  Custodian  
- **Blough Jr., Edwin C.**  
  Groundskeeper  
- **Christopher, Dennis P.**  
  Custodian  
- **Cook, Frederick P.**  
  Custodian  
- **Coy, Patricia A.**  
  Custodian  
- **Dalley, John**  
  Warehouse Clerk  
- **Dodson, Cindy A.**  
  Custodian  
- **Egeler, Steven D.**  
  Custodian  
- **Fewins, Stephen M.**  
  Custodian  
  B.S., College of St. Francis  
- **Gaylord, James C.**  
  Custodian  
- **Gray, James A.**  
  Custodian  
- **Haines, Todd A.**  
  Maintenance Mechanic  
- **Harrand, Sandra M.**  
  Custodian  
- **Kimball, Lindsey J.**  
  Custodian  
- **LaCroix, Christopher W.**  
  Custodian  
- **Lewis, Brian R.**  
  Groundskeeper  
- **MacGirr, Anthony J.**  
  Custodian  
- **Mashburn, Laura A.**  
  Custodian  
- **Misaras, Sandra**  
  Custodian  
- **Murphy, Daniel C.**  
  Maintenance Mechanic  
  Residential Builder License  
- **Pleva, Michael L.**  
  Custodian  
- **Reynolds, Valerie J.**  
  Custodian  
- **Rider, Robert M.**  
  Maintenance Mechanic  
- **Sabins, Jeffrey J.**  
  Custodian  
- **Schettek, Gary J.**  
  Painter  
- **Send, Jeffery M.**  
  Boiler Maintenance Mechanic  
- **Sexton, David A.**  
  Maintenance Mechanic  
- **Shattuck, Craig W.**  
  Custodian  
- **Somero, Troy M.**  
  Groundskeeper  
- **Trowbridge, Philip J.**  
  Custodian  
- **VanSipe, Brian L.**  
  Maintenance Mechanic  
  B.A., Spring Arbor College  
- **Yeider, Daniel W.**  
  Maintenance Mechanic  
- **Yeider, Michelle D.**  
  Custodian  

**NMC. Find it here.**
**ACC - Accounting**

**Course:** ACC 121, Accounting Principles I  
**Division:** Business
**Description:** This course covers basic principles and procedures in accounting for both a service and merchandising business. It includes the accounting cycle, financial statement preparation, manual accounting systems, petty cash, bank reconciliations, receivables, inventories, and property, plant, and equipment. Group 2 course.
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course
**Required Prerequisites:** Placement into MTH 23 or completion of MTH 08 with a 2.0 or higher  
**Recommended Prerequisites:** BUS 105.

**Course:** ACC 122, Accounting Principles II  
**Division:** Business
**Description:** Second semester accounting continues with payroll, current liabilities, partnerships, corporations, investments, bonds, cash flow statements, and financial statement analysis. Group 2 course.
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course
**Required Prerequisites:** ACC 121  
**Recommended Prerequisites:** None

**Course:** ACC 221, Intermediate Accounting I  
**Division:** Business
**Description:** A detailed analysis of the content of financial statements covering problems related to revenue recognition, time value of money, cash, receivables, and inventories including calculation and analysis of financial ratios. US and international reporting standards are compared. The course begins with a brief review of the fundamental accounting process. Group 2 course.
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course
**Required Prerequisites:** ACC 122  
**Recommended Prerequisites:** Students should possess the ability to write business communications, such as research memos and reports to management. Students should also have competency in algebra at the intermediate level

**Course:** ACC 222, Intermediate Accounting II  
**Division:** Business
**Description:** A detailed analysis of the content of financial statements covering problems related to property, plant and equipment, investments, current liabilities and contingencies, bonds, an long-term notes, leases, income taxes, and shareholders' equity. US and international reporting standards are compared. Group 2 course.
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course
**Required Prerequisites:** ACC 221  
**Recommended Prerequisites:** Students should possess the ability to write business communications, such as research memos and reports to management. Students should also have competency in algebra at the intermediate level

**Course:** ACC 225, Cost/Management Accounting  
**Division:** Business
**Description:** This course introduces the basic concepts and terminology of managerial cost accounting, its nature and tasks. Both job order cost systems and process cost systems are analyzed. The student begins building a knowledge base for managerial cost accounting through the analysis of the theory and practical applications of cost-volume-profit analysis, job costing, budgets and standard costing, and study of internal control systems in a manufacturing setting. Group 2 course.
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course
**Required Prerequisites:** ACC 121  
**Recommended Prerequisites:** ACC 122, MTH 111

**Course:** ACC 231, Federal Income Tax Problems  
**Division:** Business
**Description:** In this course, the student will learn income tax practices and procedures necessary to prepare an accurate individual income tax return. Basic tax research and planning will be incorporated. Payroll tax laws and procedures will be examined including computing wages and withholdings, computing unemployment taxes and analyzing and journalizing payroll transactions. The course includes preparation of individual and payroll tax returns. Group 2 course.
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course
**Required Prerequisites:** ACC 122  
**Recommended Prerequisites:** None

**Course:** ACC 241, Principles Fraud Examination  
**Division:** Business
**Description:** This course is an introduction to the field of forensic accounting. Topics include the history of forensic accounting, the fraud triangle theory, financial statement misrepresentation, and fraud examination techniques, including fraud prevention and control. Students will be exposed to real-world cases in the area of forensic accounting. Group 2 course.
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course
**Required Prerequisites:** ACC 122 with a 2.0 grade or higher  
**Recommended Prerequisites:** ACC 221, ACC 222, ENG 112 Recommended competencies: Critical reading ability is beneficial
Course: ACC 290, Accounting Internship  Division: Business
Description: The accounting work experience is an elective of the two-year Associate in Applied Science degree in Accounting. The purpose of this work experience course is to provide an opportunity for students to acquire accounting work experience, to apply their skills in a real work setting, and to build ties with the business/professional community. Students spend 10 hours per week in this paid or non-paid, supervised on-the-job training experience. In addition to the required 150 hours in an accounting site, students complete brief, reflective writing assignments. Students must apply at least one month prior to the semester in which they will complete the internship. Required: 12 semester credits of accounting in addition to a spreadsheet course. A minimum GPA of 3.0 in accounting. Approval of accounting instructor required. Minimum of 8 hours per week. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 12 semester credits of accounting in addition to a spreadsheet course. This internship requires the approval of accounting instructor, a GPA of 3.0 in accounting and a minimum of eight hours per week spent on-site  Co-Requisites: None  Recommended Prerequisites: ACC 221, ACC 222, MTH 111

ANT - Anthropology

Course: ANT 102, Underwater Archaeology  Division: Social Science
Description: This course will provide students with an introduction to theory, method, technologies, and practice in underwater archaeology, with case studies of prehistoric and historical sites worldwide, including the Michigan Great Lakes. This is a lecture-based course that provides a specialization in anthropology and the applied social sciences. This course also qualifies for NAS Part 3 credits. No diving is required. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ENG 99 or placement into ENG 11/111

Course: ANT 113, Intro to Cultural Anthropology  Division: Social Science
Description: The study of the role of society and culture in humankind’s adaptation to a variety of environments is the focus of this course. A variety of cultures are studied, utilizing cross-cultural comparisons. This is an introductory course which provides a broad overview of the four fields of anthropology with some concentration on archaeology. Among topics considered are field methods, theories of cultural evolution, the family, kinship, economics, religion, political organization and language. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: ENG 99 or placement into ENG 11/111  Co-Requisites: None  Recommended Prerequisites: None

Course: ANT 201, Nautical Archaeology I  Division: Social Science
Description: This is an entry level course to the Nautical Archaeology Society Training Program and is aimed at introducing nautical archaeology to divers and non-divers, and promoting their interest in the subject. It provides the basic training in archaeological survey and project management with the aim of teaching students how to design, plan and run their own field work projects. The curriculum will be presented in the classroom and in an open water setting (or onshore site for non-divers) in the field. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 99 or placement into ENG 11/111  Co-Requisites: None  Recommended Prerequisites: ANT 102

Course: ANT 202, Nautical Archaeology II  Division: Social Science
Description: This is a field archaeology course that allows students the opportunity to practice skills they learned in ANT 201. Students will design and execute a maritime archaeology project in the Grand Traverse region or other maritime landscape. Students may also participate in larger projects during special summer field schools hosted at NMC and abroad. Beach projects will be developed for non divers. The course will be offered during the summer semester on a flexible time schedule and is based on individual availability and weather conditions. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ANT 201, ENG 99 or placement into ENG 11/111
ART- Art/Fine Arts

Course: ART 100, Art Appreciation  Division: Humanities
Description: Art Appreciation is a course which allows for a great deal of exploration into the world of art as we see it. The course provides an avenue for understanding this world by investigating technique, media, idea, personal expression and meaning. In examining personal expression, surrounding issues and their effect upon society will also be analyzed. Students in this course will develop a foundation for understanding art through analytical observation, examination, interpretation and writing about art. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: ART 111, History of Western Art I  Division: Humanities
Description: The course will introduce major trends of Western Art from Pre-History through Greece, Rome and the Middle Ages. Significant works of painting, sculpture and architecture will be presented within the social, political and cultural context of each period. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ENG 111

Course: ART 112, History of Western Art II  Division: Humanities
Description: This course is designed to introduce major trends in Western Art from the Renaissance through Modernism to the present. Significant works of painting, sculpture and architecture will be presented within the social, political and cultural context of each period. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ENG 111

Course: ART 121, Drawing I  Division: Humanities
Description: Drawing I introduces the students to basic drawing skills and techniques through the use of line, form, composition, perspective and the use of chiaroscuro. The course emphasis is on using drawing as a vehicle for seeing and communicating. Students will learn to judge proportions, create volume, depict the illusion of space and to analyze their own work as well as others. Black and white dry medium will be used for all assignments. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Students are encouraged to have good reading skills or seek help

Course: ART 122, Drawing II  Division: Humanities
Description: Course will explore advanced methods in drawing including the effects of lighting, multiple panel design and conceptualizing of compositions with an emphasis on the use of new media and developing a personal style. Advanced use of color media and theory will be explored in this course. Assignments will include still life and object studies designed by both the instructors and students. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ART 121  Co-Requisites: None  Recommended Prerequisites: Students are encouraged to have good reading skills or seek help

Course: ART 131, 2-D Design  Division: Humanities
Description: A problem-solving course covering the principles of composition and design. Course will study the concepts and theory of two-dimensional design, pattern, and color as they apply to visual perception and communication. Uses predominately abstract shapes and black, white, and achromatic gray ranges. Students will study visual structure, color and their application. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Students are encouraged to have good reading skills or seek help

Course: ART 132, 3-D Design  Division: Humanities
Description: An introduction to the elements of construction and production of three-dimensional design. Shape, volume, mass, and interaction of forms and colors will be studied within a variety of conceptual modes, e.g. architecture, sculpture, package design, display, etc. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ART 131
Course: ART 151, Ceramics I  Division: Humanities
Description: This is an introductory course consisting of instruction and development of hand-building skills and basic ceramic design. Students prove critical thinking and development of technical skills by completing hand building projects that include: sets, complex shapes (made from multiple shapes), relief, pouring vessels, and a detailed sketchbook that includes research and design focused on each project. Functional pottery, sculpture, and hybrids of these forms will be the focus of this course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: ART 152, Ceramics II  Division: Humanities
Description: This course is an advanced studio intensive class that builds on the skills and knowledge developed in Ceramics I. Advanced projects using hand building and wheel throwing techniques will be completed for assessment. Projects will include the concepts of sets, bottle forms, wheel throwing, the human figure, and large stacking forms. Sketchbook/sourcebook documentation of research and design will be required. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ART 151  Co-Requisites: None  Recommended Prerequisites: None

Course: ART 161, Painting I  Division: Humanities
Description: This course will introduce concepts of painting as well as principles of design, and the development of painting techniques. Students will be given painting projects/problems throughout the semester ending with a painting that incorporates the combined skills. Oils and/or acrylic paint will be used. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Students are encouraged to have good reading skills or seek help

Course: ART 162, Painting II  Division: Humanities
Description: This course will continue to investigate the concepts of Painting I as well as elements of design, including the development of a personal style. Students will deal with more complex painting concepts, including a deeper understanding of color challenges. This course is designed to give a more independent/individual approach (than Painting I). Students will work in either oil or acrylic paint. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ART 161  Co-Requisites: None  Recommended Prerequisites: Students are encouraged to have good reading skills or seek help

Course: ART 165, Watercolor Painting I  Division: Humanities
Description: An introduction to the techniques and materials of watercolor painting. Includes use of creative effects, additive and subtractive approaches, and mixing of color to create effective paintings in a step-by-step manner. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: ART 166, Watercolor Painting II  Division: Humanities
Description: Watercolor II deals with advanced problems in watercolor painting with special emphasis on individual development and creativity particularly in the area of compositional conceptualization. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ART 165  Co-Requisites: None  Recommended Prerequisites: None

Course: ART 174, Digital Photography  Division: Humanities
Description: The learner will gain a strong understanding of light, and how it illuminates the subject, become proficient in the use of the adjustable digital camera and demonstrate, explain and craft both the history and the creative process of photography. Visual learning will allow the development of a b+w and color core of composition. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: College level reading and writing
Course: ART 181, Printmaking I  
**Division:** Humanities  
**Description:** Printmaking I is an introductory survey course that introduces the student to a wide variety of print media: relief, intaglio, embossing and monotype. Students will gain knowledge of the history, conception, production and presentation of achromatic prints. Group Two course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Students are encouraged to have good reading skills or seek help

Course: ART 182, Printmaking II  
**Division:** Humanities  
**Description:** Printmaking II expands on processes and concepts explored in Printmaking I with the emphasis on more complex techniques including lithography, drypoint, and collagraphs. Students will refine their technical skills and concepts begun in Printmaking I. Students will explore contemporary printing techniques and issues. Group Two course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** ART 181  
**Co-Requisites:** None  
**Recommended Prerequisites:** Students are encouraged to have good reading skills or seek help

Course: ART 213, Modern Art History  
**Division:** Humanities  
**Description:** This course examines the history of art from the beginning of the 20th century to present. Emphasis is placed on the continuing connection between modern art movements and the relationship of art to current social and cultural contexts. Group One course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** ENG 111

Course: ART 221, Life Drawing I  
**Division:** Humanities  
**Description:** Life Drawing I involves comprehensive studies in drawing the human figure with a variety of materials and discusses the solution of the problems of figure drawing used to advance the general qualities of grace, rhythm, and form. Explorations include gesture drawing, contour drawing and drawing the figure in motion. Life Drawing I will work primarily in charcoal and pencil. Group Two course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** ART 121  
**Co-Requisites:** None  
**Recommended Prerequisites:** ART 122

Course: ART 222, Life Drawing II  
**Division:** Humanities  
**Description:** Life Drawing II is an advanced study of problems in drawing the human figure in multiple views and in longer studies with an accent on composition and dealing not only with the model but the environment the model is in. Life Drawing II will include the introduction of color and wet media. Group Two course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** ART 221  
**Co-Requisites:** None  
**Recommended Prerequisites:** Students are encouraged to have good reading skills or seek help

ASL – World Language – American Sign Language

Course: ASL 101, American Sign Language I  
**Division:** Communications  
**Description:** ASL 101 introduces students to the language and culture of Deaf people in the United States and most of Canada. This course will focus on building vocabulary and dialogue structures needed for introductory conversation about purposeful topics, the use of non-manual grammatical markers such as facial expression, use of fingerspelling and numbers, and an introduction to the rich history and culture of the Deaf Community. Students will participate in interactive classroom activities using a "voices off" policy to ensure ASL immersion. Group Two course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None
Course: ASL 102, American Sign Language II  Division: Communications
Description: ASL 102 furthers student knowledge and experience of the language and culture of Deaf people in the United States and most of Canada. The introduction of additional vocabulary and grammar structures furthers students’ ability to communicate meaningfully with ASL users. Students will develop greater insight into the Deaf culture through the context of ASL literature and current topics relevant to the Deaf community are explored. "Voice off" policy is used for more extended periods of time. While developing communication skills, students will simultaneously mature in their understanding of the Deaf experience. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: Successful completion of ASL 101 or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: ASL 103, American Sign Language III  Division: Communications
Description: ASL 103 is a continuation of ASL 101 and ASL 102, expanding the emphasis on ASL grammar, vocabulary development, and Deaf culture. Dialogue, short stories, narratives, and short conversation, both receptive and expressive, will be featured through the course. Meaningful conversational topic development is emphasized. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: Successful completion of ASL 101 and ASL 102 or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: ASL 104, American Sign Language IV  Division: Communications
Description: ASL 104 is a continuation of ASL 101, ASL 102, and ASL 103. Students will further develop ASL grammar, vocabulary development, and Deaf culture. Dialogue, short stories, narratives, and short conversation, both receptive and expressive, will be featured through the course. Meaningful conversational topic development is emphasized. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: Successful completion of ASL 101, ASL 102, and ASL 103 or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

AST – Astronomy

Course: AST 100, Observational Astronomy  Division: Science & Math
Description: This is an introduction to astronomy. The goal of this course is to acquaint the student with the constellations, solar system objects, and their motions, the celestial sphere concept and co-ordinate system. Stars, star clusters, nebulae and galaxies are also studied. Students will use naked-eye observations as well as telescopes, spectrograph, photometer and CCD camera to observe and report findings. Each session includes training in the operation of equipment. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Students are encouraged to have high school reading and writing skills, mathematical skills to perform simple single-variable computations, and minimal geometric understanding.

Course: AST 109, Planetary Astronomy  Division: Science & Math
Description: Characteristics and properties of the solar system and its components are presented to students in the context of the history of discovery. This information is integrated with student observational data to develop a mathematical model in the laboratory. The model is developed by incorporating equations used to compute characteristics and properties of solar system components. The model is utilized by students to encourage understanding of why the solar system has evolved to its current state by evaluating the effects of changes in values of fundamental measured properties and characteristics. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: ENG 99  Co-Requisites: AST 109L  Recommended Prerequisites: ENG 11/111, may be taken concurrently, and MTH 111

Course: AST 109L, Planetary Astronomy Lab  Division: Science & Math
Description: See AST 109 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: AST 109  Recommended Prerequisites: None
Course: AST 119, Astronomy  Division: Science & Math
Description: History of discovery of the nature of the cosmos and its contents is the format utilized to develop understanding of the nature of stars and the universe, and the physical principles determining this nature. These principles underlie our proficiency for prediction of the nature of the universe and our ability to make observations of our universe. The principles are analyzed by means of a student developed mathematical model incorporating the quantitative relationships derived by physicists and astronomers. Observations provide students with the sky knowledge and data necessary for prediction of stellar characteristics. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: ENG 99  Co-Requisites: AST 119L  Recommended Prerequisites: ENG 11/111, may be taken concurrently, and MTH 111

Course: AST 119L, Astronomy Lab  Division: Science & Math
Description: See AST 119 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: AST 119  Recommended Prerequisites: None

AT – Automotive Technology

Course: AT 100, Automotive Service Basics  Division: Technical
Description: This is the first course in the Automotive Service Program. Engine theory, cooling systems, and lube requirements will be covered. Bolts, micrometers and basic specialty tools are integrated into the class. Training in the use of acetylene torch equipment will be taught along with its use in the automotive field. Students who passed a prior approved high school tech prep program will not be required to take this course. This course is designed to prepare the student to enter the automotive program. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ENG 99 and MTH 08

Course: AT 110, Automotive Brake Systems  Division: Technical
Description: This course covers theory, components, nomenclature, and service of automotive brake systems. Students will use standard skills to diagnose hydraulic systems, drum and disk brakes, power assist units and systems. The study and repair of modern ABS systems along with the replacement of associated parts such as wheel bearings will also be covered. Lab work will include procedures such as the use of brake lathes, brake line cutting and flaring procedures, and the use of electronic test equipment. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 7  Group Attribute: Group Two Course
Required Prerequisites: AT 100, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 120, Automotive Electrical I  Division: Technical
Description: This course covers basic electricity, circuits, testing equipment, and solid state electronics. In addition, this course will familiarize the student with the operation, testing, and service of the automotive starting and charging system. This is a combination lecture and lab course using both components and vehicles for demonstration. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 8  Group Attribute: Group Two Course
Required Prerequisites: AT 100, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 130, Engine Performance I  Division: Technical
Description: This course is designed to familiarize the student with the theory and operation of the automotive ignition system and fuel system. The course includes topics such as distributors, electronic ignition, distributorless systems, fuel injection systems, turbochargers and superchargers. The lab portion provides the student with actual hands-on experience with tune-up, ignition, and fuel system service. Modern test equipment will be provided and proper diagnostic techniques will be stressed. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 8  Group Attribute: Group Two Course
Required Prerequisites: AT 220  Co-Requisites: None  Recommended Prerequisites: None
Course: AT 140, Suspension and Steering   Division: Technical
Description: This course is designed to familiarize the student with the nomenclature, theory, and service techniques for the modern steering and suspension system. Includes the repair of MacPherson struts and rack and pinion service. The course will provide the student with actual experience with alignment and tire-balancing equipment. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: AT 100, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 150, Automatic Transmissions   Division: Technical
Description: This course is designed to familiarize the student with hydraulic theory, internal transmission powerflow, electronic control and torque converter operation. All aspects of transmission operation will be covered as well as removal, overhaul, and installation procedures. Students will remove, overhaul, dyno-test, and install actual failed units in the lab. The cause of the failure of these units will be explored in detail. Factory and aftermarket updates to prevent future failures will be taught. Group 2 course.
Credit Hours: 6  Contact (Billing) Hours: 9  Group Attribute: Group Two Course
Required Prerequisites: Instructor's signature required  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 160, Engine Repair   Division: Technical
Description: This course covers the theory, construction, and repair of the four stroke automotive engine. This will include the proper use of compression and leakage test equipment, precision measuring tools, special engine tools and valve grinding equipment. The lab work will include diagnosis, replacement of external parts and tear down and overhaul of actual failed engines. Group 2 course.
Credit Hours: 6  Contact (Billing) Hours: 8  Group Attribute: Group Two Course
Required Prerequisites: AT 100, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 170, Heating and Air Conditioning   Division: Technical
Description: This course covers the principles of refrigeration with emphasis on the particular problems of application to automotive air conditioning. The course also covers automotive heating systems which include heater cores, blower motors, vent systems and the electronic controls for them. The student will learn how to use refrigerant recovery and charging equipment and will have hands-on experience in the lab with that equipment. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: AT 120  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 180, Manual Drivetrain and Axles   Division: Technical
Description: This course covers the basic operating principles, construction, power flow and repair of clutches, manual transaxles, and drive shafts. Differential theory and overhaul will be covered including ring and pinion replacement and set up. Lab work will include hands-on repair of late model vehicles including four wheel drive. Group 2 course. Prerequisite: AT 100 or taken concurrently.
Credit Hours: 6  Contact (Billing) Hours: 9  Group Attribute: Group Two Course
Required Prerequisites: AT 120  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 200, Service Department Management   Division: Technical
Description: This course is designed to acquaint the student who plans a career in the automotive service industry with the duties, responsibilities, qualifications, and problems of service department manager. The student will learn general shop organization, types of service, and cost and returns by department. Time will be devoted to employer-employee and customer relations, and instruction in the use of the service manual. Also includes practice in writing and administering various forms such as work orders, rate sheets, etc. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AT 100, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 210, Hybrid Technology   Division: Technical
Description: This course provides a comprehensive systems overview of the operating principles, maintenance, and service of hybrid electric vehicles. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 8  Group Attribute: Group Two Course
Required Prerequisites: AT 130 or Certification in Electrical and Engine Tune Up  Co-Requisites: None  Recommended Prerequisites: None
Course: AT 220, Automotive Electrical II  Division: Technical  
Description: This course covers advanced automotive electronics with the emphasis placed on operation, troubleshooting, and repair of lighting, gauges, accessories, and power option circuits. Body hardware is covered including diagnostics of modern systems with body control modules. Group 2 course.  
Credit Hours: 5  Contact (Billing) Hours: 8  Group Attribute: Group Two Course  
Required Prerequisites: AT 120  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 230, Engine Performance II  Division: Technical  
Description: This course covers computerized engine controls including the latest emission control systems. The student will become proficient with the use of scanners, scopes, and the latest engine analyzers. The art of diagnostics and troubleshooting will be stressed. The student will have hands-on experience in this area including practice using the computer as a source of information. Group 2 course.  
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group Two Course  
Required Prerequisites: AT 130  Co-Requisites: None  Recommended Prerequisites: None

Course: AT 240, Unmanned Ground Vehicles  Division: Technical  
Description: This course is designed to be a capstone project for students in the Engineering Technology unmanned ground vehicle curriculum specialization. Students enrolled in this project will design and build an unmanned ground vehicle. The specifics on the type of vehicle will be developed by the instructor and students as part of the course. Students will gain experience in all areas of engineering technology, including design, project management, scheduling, budgeting and fundraising. Group 2 course.  
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group Two Course  
Required Prerequisites: AT 130, AT 220, ENG 111, MTH 111, RAM 120  Co-Requisites: None  Recommended Prerequisites: ENG 112, MTH 121

Course: AT 290, Automotive Internship  Division: Technical  
Description: The purpose of the internship is to provide on-the-job training for the student who wishes to pursue a career in a technical field of study. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10 hours per week in this paid, supervised on-the-job training experience. In addition to the required 150 hours at a work site, students participate in semi-monthly seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  
Required Prerequisites: 30 credits of program specific courses with a GPA of 2.0 or higher  Co-Requisites: None  Recommended Prerequisites: None

AUD - Audio Technology

Course: AUD 100, Applied - Audio Tech  Division: Humanities  
Description: This course consists of one-on-one mentoring in audio technology with our NMC Audio Technology staff. It is designed to customize the audio tech training experience for each student, helping to identify interests and aptitude, or to provide tutoring as needed. Group 2 course.  
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 100B, Applied - Audio Tech  Division: Humanities  
Description: This course consists of one-on-one mentoring in audio technology with our NMC Audio Technology Staff. It is designed to customize the audio tech training experience for each student, helping to identify interests and aptitude, or to provide tutoring as needed. Group 2 course.  
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: AUD 100  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 100C, Applied - Audio Tech  Division: Humanities  
Description: The course consists of one-on-one mentoring in audio technology with our NMC Audio Technology Staff. It is designed to customize the audio tech training experience for each student, helping to identify interests and aptitude, or to provide tutoring as needed. Group 2 course.  
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: AUD 100B  Co-Requisites: None  Recommended Prerequisites: None
Course: AUD 100D, Applied - Audio Tech  Division: Humanities
Description: This course consists of one-on-one mentoring in audio technology with our NMC Audio Technology Staff. It is designed to customize the audio tech training experience for each student, helping to identify interests and aptitude, or to provide tutoring as needed. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 100C  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 100E, Applied - Audio Tech  Division: Humanities
Description: This course consists of one-on-one mentoring in audio technology with our NMC Audio Technology Staff. It is designed to customize the audio tech training experience for each student, helping to identify interests and aptitude, or to provide tutoring as needed. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 100D  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 100F, Applied - Audio Tech  Division: Humanities
Description: This course consists of one-on-one mentoring in audio technology with our NMC Audio Technology Staff. It is designed to customize the audio tech training experience for each student, helping to identify interests and aptitude, or to provide tutoring as needed. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 100E  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 101, Theory for Studio Engineers  Division: Humanities
Description: This course is a study of song forms, notation of rhythms, chord symbols, key and time signatures, and familiarization with lead sheets and scores as commonly used in Pop and Jazz. This course will provide students the knowledge needed to work in a variety of musical genres and mediums. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 110, Studio Recording I  Division: Humanities
Description: This course is a combination of the study of audio and recording theory with instruction and practice in audio studio recording techniques. There is an emphasis on developing skills in the use of current technology. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 111, Studio Recording II  Division: Humanities
Description: This course is a study of audio signal processing theory, history, and application using current industry standard technology. There is an emphasis on developing skills in the operation of hardware and software to manipulate digital audio recordings. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 120, Digital Audio I  Division: Humanities
Description: This course includes a brief history of MIDI, the MIDI specification and setting up a MIDI studio. Students will learn techniques of MIDI and audio recording and editing, creating MIDI and audio tracks using MIDI software sequencers and Digital Audio Workstations (DAW). This course will present the content required for taking the Logic Level One User Certification exam. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 110  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 121, Digital Audio II  Division: Humanities
Description: Digital Audio II is a the continuation of AUD 120, Digital Audio I. This course explores Pro Tools, MIDI recording and editing, then delves further into advanced MIDI editing techniques. The use and operation of control surfaces and MIDI session strategies are explored. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 120  Co-Requisites: None  Recommended Prerequisites: None
Course: AUD 130, Live Sound I  Division: Humanities
Description: This course is an introduction to live sound techniques, including basic properties of sound, sound equipment, signal flow, and system engineering. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 131, Live Sound II  Division: Humanities
Description: This course is a continuation of live sound techniques, including acoustic properties of sound, sound equipment, signal flow, and system engineering. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 130  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 210, Studio Recording III  Division: Humanities
Description: This course builds on the topics covered in AUD 110 and AUD 111, focusing on the refining and addition of skills in digital audio recording. Students develop competencies in working with hardware and software in audio project-based settings. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 112  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 220, Digital Audio III  Division: Humanities
Description: Digital Audio III is the continuation of AUD 121, Digital Audio II. This course further explores MIDI and audio recording and editing in Logic and Pro Tools, and also delves into an exploration of software sound synthesizers and sampler instruments found in Digital Audio Workstations. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 121  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 230, Live Sound III  Division: Humanities
Description: This course is an advanced exploration of live sound techniques, including room acoustics, digital sound equipment, software analysis, and system engineering. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 131  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 250, Audio Tech Practicum  Division: Humanities
Description: This course is designed to give students practical experience in digital audio recording. Students participate in a variety of recording situations using various hardware and software recording techniques. Students apply techniques used in previous recording and digital audio courses. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: AUD 110, AUD 120, AUD 130  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 260, Audio Tech Internship  Division: Humanities
Description: This course is required for the Associate of Applied Science degree in Audio Technology. The purpose of the internship is to provide on-the-job experience for the student who wishes to pursue a career in audio related fields. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firms. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: AUD 210, AUD 220, AUD 230; or instructor approval  Co-Requisites: None  Recommended Prerequisites: None

Course: AUD 270, Audio Tech Final Project  Division: Humanities
Description: This course is required for the Associate of Applied Science degree in Audio Technology. The purpose of the Audio Tech Final Project course is to provide in-depth intensive training experience in an area of specialization in audio technology. The student will be paired with staff in their area of expertise. Examples are Audio for Worship, Mastering, Audio for Film, Scoring, etc. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: AUD 210, AUD 220, AUD 230  Co-Requisites: None  Recommended Prerequisites: None
AVF – Aviation Flight

Course: AVF 111, Private Flight  Division: Aviation
Description: A flight course structured to provide a minimum of 40 dual and solo flight hours to meet the aeronautical experience requirements for a private pilot. Upon completion of this course, the student will have attained the FAA Private Pilot Rating. Group 2 course.
Credit Hours: 5 Contact (Billing) Hours: 5 Group Attribute: Group Two Course
Required Prerequisites: Instructor permission required to enroll Co-Requisites: None Recommended Prerequisites: None

Course: AVF 118, Instrument Flight I  Division: Aviation
Description: This course is the beginning stage of the Instrument Pilot Rating. The ground work will be laid for students to safely fly by the instruments. Skills and techniques will be gained to effectively move to Instrument Flight II where holding, tracking, and approaches will be learned. Both the aircraft and flight simulator will be used to obtain skills required for this course. Objectives learned will go toward the FAA Instrument Rating. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: Private Pilot Rating Co-Requisites: None Recommended Prerequisites: None

Course: AVF 130, Instrument Flight II  Division: Aviation
Description: The aircraft and the simulator will be used to teach the required skills. The student will learn tracking and instrument approaches. At the culmination of this course the student will have gained actual instrument flight time and be a competent instrument pilot and will be signed off for the FAA Instrument check ride. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: AVF 118, Private Pilot Rating Co-Requisites: None Recommended Prerequisites: None

Course: AVF 141, Introduction to UAS  Division: Aviation
Description: Students will be introduced to the world of Unmanned Aerial Systems. This course takes a look at everything from current Unmanned Aircraft Systems to future civilian applications. In addition to learning about this new industry, students will be introduced to flying remotely piloted aircraft and operating entry level Unmanned Aerial Vehicles. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 4 Group Attribute: Group Two Course
Required Prerequisites: None Co-Requisites: None Recommended Prerequisites: None

Course: AVF 230, Commercial Flight I  Division: Aviation
Description: The student will advance their skills required by the FAA to obtain a Commercial Pilot Certificate. They will gain experience in different aircraft with the opportunity to gain a Tailwheel Endorsement or Seaplane Rating. Students will increase their instrument proficiency while conducting cross country flights. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: Instrument Flight Rating; AVF 130, may be taken concurrently Co-Requisites: None Recommended Prerequisites: None

Course: AVF 232, Commercial Flight II  Division: Aviation
Description: A flight course structured to provide a minimum of 45 dual and solo flight hours to partially fulfill the flight hour requirements for the FAA Commercial Pilot Certificate. This course will provide a review of VFR and IFR cross country navigation procedures and introduce the student to multi-engine flight. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: AVF 230; AVF 230, may be taken concurrently Co-Requisites: None Recommended Prerequisites: None

Course: AVF 234, Commercial Flight III  Division: Aviation
Description: This course is the last of three flight courses required to obtain the FAA Commercial Pilot Certificate. This course consists of approximately 18 flight hours with an emphasis on commercial flight maneuvers in preparation for the Commercial Pilot FAA Practical Test. Upon completion of this course, the student will have attained the FAA Commercial Pilot Certificate. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: AVF 232, may be taken concurrently Co-Requisites: None Recommended Prerequisites: None
Course: AVF 241, UAS II  Division: Aviation
Description: Students will apply what they have learned in previous courses by working largely in the field conducting simulated and real life flight missions. This course focuses on applying Unmanned Aerial Systems to future civilian applications such as inspections, aerial mapping, and aerial photography. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 4 Group Attribute: Group Two Course
Required Prerequisites: AVF 141 and either AVG 210 or AVG 261  Co-Requisites: None  Recommended Prerequisites: None

Course: AVF 271, Multi-Engine Flight  Division: Aviation
Description: This flight course involves approximately 10 flight hours in an airplane/simulator and 5 ground hours and is designed to give the student the aeronautical knowledge, proficiency, and experience required to meet the FAA Practical Test Standards for the Private or Commercial Multi-engine rating. Upon completion of this course, the student will have attained the FAA Multi-engine Land Rating. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: Private Pilot Rating  Co-Requisites: None  Recommended Prerequisites: None

Course: AVF 274, Tailwheel Flight  Division: Aviation
Description: This course is designed to provide the student with the skills, knowledge, and experience to receive a logbook endorsement to fly tailwheel aircraft. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: Private Pilot Rating  Co-Requisites: None  Recommended Prerequisites: None

Course: AVF 275, Seaplane Flight  Division: Aviation
Description: In this course, the student will gain the skills, knowledge, and experience to receive endorsement for the FAA Practical Test. Students will learn in a Piper Super Cub on floats as they demonstrate maneuvers and landings. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: Private Pilot Rating  Co-Requisites: None  Recommended Prerequisites: None

Course: AVF 281, Advanced Cross Country Flight  Division: Aviation
Description: Students will be exposed to various terrain and weather conditions while accomplishing 50 hours of multi-engine cross-country flight. They will be responsible for all aspects of flight planning, ground handling of aircraft, and management of cargo and passengers as necessary. All flight lessons will be conducted with a Multi-Engine Flight instructor. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: Multi-Engine Rating  Co-Requisites: None  Recommended Prerequisites: Commercial Pilot Rating

Course: AVF 283, Upset Maneuver Training  Division: Aviation
Description: In this course, the student will learn the foundations to safely perform basic aerobatic maneuvers. Also, the student will gain confidence and skills necessary to recover from various unusual flight attitudes that will increase the students’ overall flight safety. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: Private Pilot Rating  Co-Requisites: None  Recommended Prerequisites: None

Course: AVF 284, Instrument Flight Instructor  Division: Aviation
Description: The student perfects both teaching and instrument flying skills while sitting in the right seat of the cockpit. The student develops the knowledge and ability to teach others instrument flying procedures. Training utilizes instrument equipped aircraft and a Frasca simulator. The course consists of 10-20 hours of flying and 10-20 hours of ground time. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: Flight Instructor Rating  Co-Requisites: None  Recommended Prerequisites: None

Course: AVF 285, CRM Flight  Division: Aviation
Description: Students will learn the principles of Crew Resource Management (CRM) with 50 hours of flight in a multi-engine aircraft, including the challenge and response concepts used in corporate, regional, or major airlines. Lessons will explore decision making during normal, adverse, or unplanned conditions during all phases of flight. Students will be in the role of both Captain and First Officer. All flight lessons will be conducted in a multi-engine aircraft with a Certified Flight instructor. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: Multi-Engine Rating  Co-Requisites: None  Recommended Prerequisites: Commercial Pilot Rating
Course: AVF 382, Flight Instructor Rating  Division: Aviation
Description: In this course the student will learn the skills to be a Certified Flight Instructor (CFI). They will master the skills of the Private and Commercial Pilot ratings. In addition they will learn how to be an effective teacher and understand all FAA rules and regulations that accompany being an instructor. The student will learn in this course through the use of the simulator and aircraft. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: Commercial Pilot with Instrument Rating  Co-Requisites: None  Recommended Prerequisites: None

AVG – Aviation Ground

Course: AVG 101, Private Ground School  Division: Aviation
Description: A course of study that will provide the aeronautical knowledge required of a private pilot and prepare the student to take the FAA Private Pilot written examination. Topics include: aerodynamics, engine and aircraft systems, airport operations, weight and balance, aircraft performance, Federal Aviation Regulations, meteorology, airspace, navigation, and flight physiology. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: Instructor permission required to enroll  Co-Requisites: None  Recommended Prerequisites: None

Course: AVG 161, Mechanics for Pilots  Division: Aviation
Description: This course will teach the students about the systems, components, safe repair, and regulations involved with maintaining and operating small aircraft. Students will learn in the classroom and in the maintenance hangar. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Private Pilot Rating

Course: AVG 190, Aviation Weather  Division: Aviation
Description: This course offers thorough coverage in the application and analysis of meteorological charts and how they pertain to aviation. It emphasizes the need for advanced knowledge on how NWS/NOAA charts are derived and how to understand their use in aviation today. Additional emphasis will be placed on predominant weather patterns, associated weather and planning flights to avoid severe weather. A basic understanding in the theory of meteorology is desired. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: AVG 101

Course: AVG 201, International Aviation  Division: Aviation
Description: This course will provide an overview and analysis of the international aviation industry. International oversight organizations will be reviewed along with interactions with national regulations. Students will evaluate country differences with regard to aviation regulations, global safety records and business forecasts. An overview of cultural differences, which can effect International Aviation Operations, will be covered with case studies from current international pilots. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: AVG 101

Course: AVG 202, Advanced Aircraft Systems  Division: Aviation
Description: This course is designed to prepare those students seeking to be career pilots to be successful in the intense aircraft systems ground schools offered by the airlines, manufacturers, and private training providers such as Flight Safety. Each major system of large turbine aircraft will be studied, first, in a general overview and then for a specific model, large transport category, jet aircraft. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: AVG 101

Course: AVG 204, Airline Aircraft Ground School  Division: Aviation
Description: This course is designed to prepare those students seeking to be career pilots to be successful in the intense aircraft ground schools provided by the airlines. Canadair Regional Jet systems, limitations, normal and emergency checklist, and flows and flight procedures will be covered in this course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: AVG 202
Course: AVG 210, UAS I  Division: Aviation
Description: This course will guide students deeper into the Unmanned Aerial Systems Industry. Topics will include Federal Regulations for UAS, components of Unmanned Aerial Vehicles, autopilot programming and flight plan development. Students will be working with UAS autopilot simulators and also be introduced to flying professional UAS systems. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: AVF 141, may be taken concurrently; AVF 141; EET 103-can be taken concurrently  Co-Requisites: None  Recommended Prerequisites: AVG 101.

Course: AVG 231, Aviation Law  Division: Aviation
Description: A study of fundamental legal and aviation law principles as they apply to the various segments of the aviation industry. There will be special emphasis on contemporary aviation legal issues. The highlight of the course will be a mock court where the students, acting as plaintiff and defense attorneys, will argue an actual aviation civil case before an impartial jury. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: AVG 240, Corporate Aviation Ground  Division: Aviation
Description: Students taking this course will learn about the aspects of corporate aviation. Aircraft, regulations, business customs, and future outlooks of corporate aviation will be presented. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: AVG 202

Course: AVG 251, Commercial Ground School  Division: Aviation
Description: An advanced study of aviation topics including: GPS, meteorology, radio communications, airspace, and Federal Aviation Regulations. In addition, aircraft systems, career opportunities, aviation safety, aircraft weight and balance, performance charts, and aerodynamics are reviewed with emphasis on commercial pilot operations. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: AVG 101 or Private Pilot Rating

Course: AVG 252, Instrument Ground School  Division: Aviation
Description: A course of study that will provide the aeronautical knowledge required for the instrument rating and prepare the student to take the FAA Instrument Rating - Airplane written examination. Topics include: flight instruments, radio navigation, departure, enroute and arrival procedures, VOR, NDB, ILS, and GPS approaches, IFR emergencies, aviation weather, and IFR cross-country flight planning. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: AVF 101 or Private Pilot Rating; AVG 101 or Private Pilot Rating

Course: AVG 285, Crew Resource Dynamics  Division: Aviation
Description: An introduction to the principles of crew resource management. This course will acquaint students with the concepts and skills required of aircrew members in safely operating multi-place aircraft. Topics will include flight safety concepts, communications skills, effective teamwork principles, personality types, and aircraft accident case studies. Students will practice CRM concepts in the Frasca flight training device. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: AVG 251, may be taken concurrently; AVF 130  Co-Requisites: None  Recommended Prerequisites: None

Course: AVG 381, Instructor Ground School  Division: Aviation
Description: A course of study that will provide basic education principles and a review of the aeronautical knowledge required for the flight instructor (airplane single engine) certificate and prepare the student to take the FAA Fundamentals of Instruction (FOI) and the Flight Instructor-Airplane Single Engine written examinations. Through classroom presentations and one-on-one student teaching, students will gain practical teaching experience. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: AVF 230, AVG 251  Co-Requisites: None  Recommended Prerequisites: None
Course: BIO 106, Human Biology  Division: Science & Math
Description: A survey of Human Anatomy and Physiology with a primary focus on health and disease. Topics to be discussed will include the cell structure, simple chemistry of biology, homeostasis, the organ systems, genetics, nutrition, exercise physiology, cancer, heart disease, immunology, AIDS, the effects of drugs and alcohol, and other topics of current interest. This course does not meet the requirements for the Nursing program. Consult an advisor before enrolling. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 106L  Recommended Prerequisites: Students scoring below MTH 23 & ENG 111 on the placement test should plan on additional study time

Course: BIO 106L, Human Biology Lab  Division: Science & Math
Description: See BIO 106 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 106  Recommended Prerequisites: None

Course: BIO 108, Plant Biology  Division: Science & Math
Description: Since almost all life on earth depends upon photosynthesis, this course places its emphasis on the fascinating world of plants. It includes a study of plant structure, growth, development, propagation and scientific concepts on which horticulture is based. Laboratory exercises will include greenhouse work. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 108L  Recommended Prerequisites: It is highly recommended that students have completed, or are concurrently enrolled in MTH 23 and ENG 111

Course: BIO 108L, Plant Biology Lab  Division: Science & Math
Description: See BIO 108 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 108  Recommended Prerequisites: None

Course: BIO 110, Essential Biology  Division: Science & Math
Description: Essential Biology is geared toward the non-major. The course will cover broad areas of biology, engage the student in how biology relates to their own life, and how science and society interact. Core concepts covered include: Evolution, Structure and Function, Information Flow, Exchange and Storage, Pathways and Transformations of Energy and Matter, and Living Systems. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 110L  Recommended Prerequisites: It is highly recommended that students have completed, or are concurrently enrolled in MTH 23 and ENG 111. Students enrolling in BIO 110 that have not met these requirements should plan on additional study time

Course: BIO 110L, Essential Biology Lab  Division: Science & Math
Description: See BIO 110 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 110  Recommended Prerequisites: None

Course: BIO 115, Cell, Plant & Ecosystem Biology  Division: Science & Math
Description: An introduction to the fundamental concepts of biology, including an investigation of the major kingdoms of life, classification, ecology, botany, cellular anatomy and biochemistry, DNA structure and function, genetic engineering, cloning and stem cell technologies. Laboratory includes field work and investigative exercises which illustrate lecture topics. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 115L  Recommended Prerequisites: MTH 111

Course: BIO 115L, Cell, Plant, Ecosystem Bio Lab  Division: Science & Math
Description: See BIO 115 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 115  Recommended Prerequisites: None
Description: This lecture and lab course concentrates on cell division, classical genetics as well as evolution and speciation. It also covers the biology of organisms including invertebrate and vertebrate animals. The treatment of the topics in this course necessarily assume a degree of familiarity with the basic biological concepts covered in BIO 115. Students who have not completed BIO 115 should expect to spend extra time reviewing these concepts throughout the course. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 116L  Recommended Prerequisites: BIO 115, MTH 111

Description: See BIO 116 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 116  Recommended Prerequisites: BIO 115, MTH 111

Course: BIO 208, Microbiology  Division: Science & Math
Description: Introductory microbe physiology emphasizes human response to disease and the importance of microbes in environmental cycles. Laboratory is included. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group One Course
Required Prerequisites: Completion of any 100-level BIO course  Co-Requisites: BIO 208L  Recommended Prerequisites: ENG 111, MTH 111

Course: BIO 208L, Microbiology Lab  Division: Science & Math
Description: See BIO 208 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 208  Recommended Prerequisites: None

Course: BIO 215, Genetics  Division: Science & Math
Description: Continuation of general biology genetics. Classical genetics will be covered in addition to an in-depth study of molecular genetics, recombinant DNA and human inheritance. A major emphasis will be on the current state of genetic research. Population genetics will also be covered. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: Completion of any 100 level BIO course  Co-Requisites: None  Recommended Prerequisites: ENG 111, MTH 111

Course: BIO 220, Nutrition in Human Health  Division: Science & Math
Description: This course is an exploration of the fundamentals of nutrition: energy nutrients, vitamins and minerals. Function and sources of each is presented, as well as the role each plays in maintaining health. Students complete their own Food Intake Record and use this information throughout the semester so as to better understand human nutrition. In addition, study is made of the role nutrition along with other lifestyles plays in the prevention and protection from disease. Discussion also includes the relationship between nutrition and fitness. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ENG 111, MTH 111, and completion of any 100-level Biology course

Course: BIO 227, Human Anatomy & Physiology I  Division: Science & Math
Description: This course will include an introduction to cells, histology, biochemistry, and homeostasis. In addition, the following systems will be discussed: integumentary, skeletal, muscle, nervous, and special senses. Lecture will be accompanied by lab work and applications, which will stress the anatomy, histology and function of these organ systems. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group One Course
Required Prerequisites: MTH 111; ENG 11/111 or ENG 111 may be taken concurrently  Co-Requisites: BIO 227L  Recommended Prerequisites: CHM 101, HAH 101, and completion of any 100-level Biology course. It is highly recommended that students have college level reading skills. Students enrolling in BIO 227 who have not completed these requirements should plan on additional study time.

Course: BIO 227L, Human Anatomy & Phys I Lab  Division: Science & Math
Description: See BIO 227 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 227  Recommended Prerequisites: None
Course: BIO 228, Human Anatomy & Physiology II  Division: Science & Math
Description: This is the second part of a two-semester course. The second semester will include major systems in the body including: the endocrine system, cardiovascular system, lymphatic system, respiratory system, digestive system, metabolism, urinary system, fluid balance, reproduction and inheritance. Lecture will be accompanied by lab work, which will stress the anatomy and histology of these organ systems. Group 1 lab course.
Credit Hours: 4 Contact (Billing) Hours: 6 Group Attribute: Group One Course
Required Prerequisites: BIO 227, BIO 227L  Co-Requisites: BIO 228L  Recommended Prerequisites: None

Course: BIO 228L, Human Anatomy & Phys II Lab  Division: Science & Math
Description: See BIO 228 course description.
Credit Hours: 0 Contact (Billing) Hours: 0 Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 228  Recommended Prerequisites: None

Course: BIO 240, Normal and Clinical Nutrition  Division: Science & Math
Description: Nutrition is considered from a strong biological point of view. Discussions will include a brief overview of principles of normal nutrition and then will proceed to how these principles apply to cause and treatment of specific disease states and the nutrition care process required. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: BIO 227, MTH 08 or equivalent

Course: BIO 250, Natural History of Vertebrates  Division: Science & Math
Description: This course introduces students to the biology and diversity of vertebrate species in Michigan. The life history, anatomy behavior, systematics, ecology and conservation of each group of vertebrates are examined. Field studies, laboratory investigations, and classroom discussion will help students understand the biology of fishes, amphibians, reptiles, birds and mammals, as well as their relationships to particular habitats. Local vertebrate species and field study techniques are stressed. Group 1 lab course.
Credit Hours: 4 Contact (Billing) Hours: 6 Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 250L  Recommended Prerequisites: ENG 111, MTH 111, and completion of any 100-level Biology course

Course: BIO 250L, Natural History of Vert. Lab  Division: Science & Math
Description: See BIO 250 course description.
Credit Hours: 0 Contact (Billing) Hours: 0 Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: BIO 250  Recommended Prerequisites: None

Course: BIO 255, Pathophysiology  Division: Science & Math
Description: This course covers the etiology, progression, and treatment of disease in the human body. Cellular and tissue structure and function are addressed along with the role of the immune system in body defenses. Disorders and diseases for each body system are covered. Group 1 course.
Credit Hours: 4 Contact (Billing) Hours: 4 Group Attribute: Group One Course
Required Prerequisites: BIO 228 & BIO 228L with 2.0 or better  Co-Requisites: None  Recommended Prerequisites: BIO 208, HNR 108

Course: BIO 268, Biochemistry  Division: Science & Math
Description: Study of the basic fundamentals of the chemical composition of living matter with application of concepts to normal and abnormal human function. Course is designed for ADN completion students. Group 1 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group One Course
Required Prerequisites: CHM 101  Co-Requisites: None  Recommended Prerequisites: BIO 227, BIO 227L, MTH 23

BUS – Business

Course: BUS 101, Introduction to Business  Division: Business
Description: American business in the twenty-first century is exciting and challenging. Students will be introduced to the variety of opportunities by exploring ownership, free enterprise, the world economy, management, marketing, international business, social responsibility and business ethics, and entrepreneurship. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 99
Course: BUS 105, Business Math  Division: Business
Description: Apply basic mathematical principles to solve problems in modern business practice. Topics include trade pricing, markups, profit and loss, interest, payroll, taxes, and investments. It is designed for day-to-day business applications. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: MTH 08 with grade 2.0 or higher or placement into MTH 23  Co-Requisites: None  Recommended Prerequisites: None

Course: BUS 155, Interpersonal Communications  Division: Business
Description: To be well prepared for employment in the 21st century it will be mandatory for students to demonstrate effective human relations. Individuals who enter the workforce in any field will need to possess interpersonal and customer service skills. The global workplace will demand competence in interpersonal or "soft" skills. Excellent customer service and relationship building skills are a necessary component of overall business communications. Topics include: communication and identity, conflict and communication climates, and how to build and maintain effective relationships with external and internal customers.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: Placement into ENG 99

Course: BUS 231, Professional Communications  Division: Business
Description: Communicating professionally is a critical skill in a today's world. This course is designed to help students understand communication theory and its application in their professional lives. Students will develop effective writing skills by analyzing complex issues, organizing thoughts logically, and communicating those ideas concisely--in verbal and written form. Students will also practice effective listening skills, understand the components of a successful job search, and use teamwork skills in solving communication problems. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 100, placement into ENG 111

Course: BUS 261, Business Law I  Division: Business
Description: This course is a study of the U.S. legal system and specific areas of law related to business, with an emphasis on the techniques of legal decision-making. Topics include the judicial system, torts, contracts, and criminal law. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: BUS 290, Business Admin Internship  Division: Business
Description: This course is a requirement for the Associate of Applied Science degree in Business Administration. The objective of the internship is to assess the Business Administration Program Outcomes, and to provide an on-the-job experience for the student pursuing a career in business. At the end of the semester students take a third party assessment to measure their knowledge of business operations, the business organization and business procedures. Students will spend 150 hours over the semester in this paid or non-paid, supervised training experience. In addition students will meet with the Experiential Learning Coordinator as needed throughout the semester for: internship support, feedback, review of professional employment document and an internship exit interview. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 30 credits of program specific courses with a GPA of 2.0 in occupational courses Co-Requisites: None  Recommended Prerequisites: None

CAR – Carpentry

Course: CAR 101, Introduction to Carpentry  Division: Construction Technology
Description: This course provides an introduction to residential carpentry. Through structured classroom and hands-on skill building, the student will learn about building materials, fasteners and adhesives, hand and power tools, reading plans and elevations, and floor systems. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into MTH 23 or higher, or co-enrollment in the recommended developmental math course. Placement into ENG 11/111 or higher, or co-enrollment in the recommended English course
Course: CAR 102, Intro to Woodworking  
**Division:** Construction Technology  
**Description:** This course is for the student that has a desire to experience woodworking in the area of basic cabinet and furniture making. Techniques in the usage and maintaining of basic hand and power tools, understanding of how wood movement will affect design of an assembly, application of basic joinery, adhesives, and fasteners in the woodworking completion of this class establishes a foundation in which the student can build simple furniture and cabinets. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Recommended competencies: MTH 111 completion or competency

Course: CAR 103, Construction Blueprint Reading  
**Division:** Construction Technology  
**Description:** Students will learn the skills needed to read and understand construction drawings, as well as an understanding of manufacturers’ literature of component parts used in buildings. Both commercial and residential construction materials and drawings are studied. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into MTH 23 or higher, or co-enrollment in the recommended developmental math course. Placement into ENG 11/111 or higher, or co-enrollment in the recommended English course

Course: CAR 104, Woodworking Applications I  
**Division:** Construction Technology  
**Description:** This course is for the student with a strong understanding of hand and power tools used in the craft of woodworking. A desire to expand their knowledge in the aspects involved with basic furniture and cabinet building is a must. Students will be constructing projects that, by design, will challenge those of the advanced beginner and intermediate skill abilities. Students will plan and implement the necessary steps to address the projects’ hardware and joinery requirements. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** CAR 102  
**Co-Requisites:** None  
**Recommended Prerequisites:** Students will greatly benefit from having competency up to MTH111

Course: CAR 105, Foundations and Framing  
**Division:** Construction Technology  
**Description:** Through structured classroom and hands-on skill building, the student will learn foundation design, lay-out, concrete materials, forms and applications, floor, wall, ceiling and roof framing and basic stair layout. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into MTH 23 or higher, or co-enrollment in the recommended developmental math course. Placement into ENG 11/111 or higher, or co-enrollment in the recommended English course

Course: CAR 121, Exterior Construction  
**Division:** Construction Technology  
**Description:** Through structured classroom and hands-on skill building, the student will learn about various roofing materials and applications, window and door installation, siding, cornice design and installation, gutters, downspouts, decks and fences. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into MTH 23 or higher, or co-enrollment in the recommended developmental math course. Placement into ENG 11/111 or higher, or co-enrollment in the recommended English course

Course: CAR 125, Interior Construction  
**Division:** Construction Technology  
**Description:** Through structured classroom and hands-on skill building, the student will learn about drywall products, installation, and finishing, wall panels, tile, suspended ceilings, finish trim, flooring, and cabinet and countertop installation. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into MTH 23 or higher, or co-enrollment in the recommended developmental math course. Placement into ENG 11/111 or higher, or co-enrollment in the recommended English course
CD – Child Development

Course: CD 101, Early Childhood Education  Division: Social Science  
Description: This course familiarizes students with the history and present state of early childhood education, from birth to 10 years of age. An overview of child development theories is presented in the context of the role of the educator/caregiver. Resources and careers, and contemporary issues such as school readiness and exploration of various education philosophies are also included. Early Education environment observations are required as well as a working general education philosophy. The observations are set by students to meet their schedules. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CD 202, Human Growth and Development  Division: Social Science  
Description: This course focuses on the issues related to child development. It examines the reasons for child study and its influence on families and education. The interactions between all the developmental domains will be studied from conception up to adolescence. Students will become familiar with the most recent research, and design their own field observation and projects that support and test current theories of development. In addition, students will explore how professional work with children is changing and how they can become advocates for the well-being of children and families in their community, nation and the world. Group 2 course.  
Credit Hours: 5  Contact (Billing) Hours: 5  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CD 101 or PSY 101

Course: CD 203, Guiding Young Children  Division: Social Science  
Description: This course examines the preparation of a positive learning environment. The development and use of equipment with children birth through 10 years of age is explored. Special emphasis on the development of techniques in personal interactions with children is also examined. Current concepts and approaches that directly relate to the mental health of the child and his/her family are explored. Anger management and conflict resolution skills are especially emphasized through the building of positive environments. Field observations are required and are set by students to meet their schedules. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CD 101

Course: CD 204, Early Childhood Curriculum  Division: Social Science  
Description: An active learning approach is used to develop student's skills in planning, implementing and evaluating developmentally appropriate learning experiences for children ages two-and-a-half to 10. Various curriculum areas are covered: science, pre-math, math, drama and music, creative art, sensory, gross and fine motor, social studies and language arts. Basic skills and concepts, resource materials and teaching methods (developmental) are explored for each curriculum area. There is a strong emphasis on individualizing curriculum using the child's interests, modality of learning and intelligence theories. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CD 101

Course: CD 206, Infant/Toddler Development  Division: Social Science  
Description: This class provides an in-depth study of the physical, cognitive, social and emotional development of the infant and toddler. There will be a focus on attachment and bonding and how that relates to brain development and later social and academic development. There will also be an emphasis on the connections of pregnancy and early bonding. Students will learn how to build foundation relationships that are trust based. They will also develop skills to help families build a respectful and responsive environment for children. Students will learn how to use best practice methods with infants and toddlers and their families. Course includes time in class and hours outside class doing observation and applicable in-service work. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CD 101

Course: CD 220, Childhood Program Management  Division: Social Science  
Description: This course will examine the administrative fundamentals of early childhood programs and will include establishment funding, licensing, staffing, budgets, equipment, philosophy and program planning. Group 2 Course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CD 101
Course: CD 230, Early Language and Literacy  Division: Social Science
Description: This course is designed to teach students how to recognize and implement appropriate environmental strategies that support early literacy development and appropriate early experiences with books and writing. Emphasis is placed on speaking and listening, as well as reading and writing readiness. This group of skills includes expressive and receptive language, concepts of print and appreciation of literature, emergent writing, letter knowledge, and phonological awareness. Upon completion of the course, students will be able to select, plan, implement, and evaluate appropriate early literacy experiences. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CD 101

Course: CD 290(A, B or C) Academic Service/Internship  Division: Social Science
Description: Placement in a daycare, nursery school, early elementary grades in grade school or other agencies that deal with children, birth through 12 years of age. The student will have the opportunity to interact with children, assist with planning for them and evaluate their progress under direct supervision. These credits can be divided over more than one semester.
Credit Hours: 1 – 4  Contact (Billing) Hours: 1 – 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CD 101

CHM – Chemistry

Course: CHM 101, Introductory Chemistry  Division: Science & Math
Description: A one-semester chemistry course for the non-science major exploring the language, concepts and methods of chemistry. Topics include atomic theory, chemical periodicity, chemical bonding, stoichiometry, gases, nuclear energy, equilibrium, and acid/base chemistry. The laboratory will include descriptive and analytical experiments, focusing on measurement, physical and chemical properties of materials, acids and bases, laboratory procedures and calculations. Science, engineering, and premedical students must select CHM 150 and 151 to meet chemistry requirements. Consult with an advisor before enrolling. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: MTH 111  Co-Requisites: CHM 101L  Recommended Prerequisites: ENG 111, It is highly recommended that students have college level reading and math skills, including the ability to work algebraic problems involving unknown variables, fractions, percents and portions. Students enrolling in CHM 101 who have not completed these requirements should plan on additional study time

Course: CHM 101L, Introductory Chemistry Lab  Division: Science & Math
Description: See CHM 101 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: CHM 101  Recommended Prerequisites: None

Course: CHM 150, General Chemistry I  Division: Science & Math
Description: First semester of a two-semester course covering matter and chemical measurement, basic laws, chemical symbols and formulas, stoichiometry and chemical calculations, gases and the gas laws, thermochemistry, atomic structure, electron configurations and the periodic table, elements, chemical bonding and molecular structure, intermolecular forces, liquids and solids. The laboratory includes descriptive and quantitative experiments illustrating the above topics. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: MTH 111  Co-Requisites: CHM 150L, CHM 150R  Recommended Prerequisites: MTH 121

Course: CHM 150L, General Chemistry I Lab  Division: Science & Math
Description: See CHM 150 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: CHM 150, CHM 150R  Recommended Prerequisites: MTH 121

Course: CHM 150R, General Chemistry I, Recitation  Division: Science & Math
Description: Problem solving quizzes and laboratory preparation to accompany lectures. Group 1 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group One Course
Required Prerequisites: MTH 111  Co-Requisites: CHM 150, CHM 150L  Recommended Prerequisites: MTH 121
Course: CHM 151, General Chemistry II  
**Division:** Science & Math  
**Description:** A second semester course covering chemical reactions in aqueous solution including acid-base and oxidation and reduction reactions, properties of solutions, chemical kinetics, gaseous equilibria, acids and bases, acid-base equilibria, pH, common ion effect, buffer systems, solubility product constant, thermodynamics, enthalpy, entropy, and free energy, electrochemistry, and nuclear, chemistry. The laboratory will cover the above topics using quantitative and qualitative procedures. The recitation involves problem solving, quizzes and laboratory preparation to accompany lectures. Group 1 lab course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 5  
**Group Attribute:** Group One Course  
**Required Prerequisites:** CHM 150, CHM 150L  
**Co-Requisites:** CHM 151L, CHM 151R  
**Recommended Prerequisites:** None

Course: CHM 151L, General Chemistry II Lab  
**Division:** Science & Math  
**Description:** See CHM 151 for course description.  
**Credit Hours:** 0  
**Contact (Billing) Hours:** 0  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** CHM 151, CHM 151R  
**Recommended Prerequisites:** None

Course: CHM 151R, General Chemistry II Recitatn  
**Division:** Science & Math  
**Description:** Problem solving, quizzes and laboratory preparation to accompany lectures. Group 1 course.  
**Credit Hours:** 1  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group One Course  
**Required Prerequisites:** CHM 150R  
**Co-Requisites:** CHM 151, CHM 151L  
**Recommended Prerequisites:** None

Course: CHM 250, Organic Chemistry I  
**Division:** Science & Math  
**Description:** The first semester of a two-semester course covering the chemistry of carbon compounds. Designed to meet the requirements for majors in chemistry, chemical engineering, biological science, pre-medicine, etc. Topics include nomenclature, structure, aliphatic compounds, free-radical, nucleophilic substitution and elimination reactions, electrophilic addition reaction and mechanisms, alkyl halides, alkenes, alkynes and alcohols. The laboratory portion will cover fundamental organic laboratory techniques of synthesis, separation and analysis. Group 1 lab course.  
**Credit Hours:** 5  
**Contact (Billing) Hours:** 9  
**Group Attribute:** Group One Course  
**Required Prerequisites:** CHM 151, CHM 151L, CHM 151R  
**Co-Requisites:** CHM 250L  
**Recommended Prerequisites:** None

Course: CHM 250L, Organic Chemistry I Lab  
**Division:** Science & Math  
**Description:** See CHM 250 for course description.  
**Credit Hours:** 0  
**Contact (Billing) Hours:** 0  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** CHM 250  
**Recommended Prerequisites:** None

Course: CHM 251, Organic Chemistry II  
**Division:** Science & Math  
**Description:** A follow-up to CHM 250. Topics include alcohols, aromatics, ethers and epoxides, arenes, carboxyls, carboxylic and sulfonic acids and their derivatives, amines, phenols, aryl halides, carbohydrates, amino acids, biochemical processes, and others together with appropriate mechanistic theories and structural concepts. Instrumental techniques discussed include infrared spectroscopy (IR), nuclear magnetic resonance (NMR), mass spectrometry (MS), and ultraviolet (UV) spectroscopy. The lab exercises will continue the development of organic chemistry laboratory technique on both semi-microscale and microscale. In addition, analytical techniques using infrared spectroscopy and gas chromatography will be developed. Group 1 lab course.  
**Credit Hours:** 5  
**Contact (Billing) Hours:** 9  
**Group Attribute:** Group One Course  
**Required Prerequisites:** CHM 250, CHM 250L  
**Co-Requisites:** CHM 251L  
**Recommended Prerequisites:** None

Course: CHM 251L, Organic Chemistry II Lab  
**Division:** Science & Math  
**Description:** See CHM 251 for course description.  
**Credit Hours:** 0  
**Contact (Billing) Hours:** 0  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** CHM 251  
**Recommended Prerequisites:** None
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Keyboarding skills; CIT 122A or equivalent experience

Course: CIT 110, Programming Logic and Design  Division: Business
Description: This course will prepare the student for programming courses. Topics covered include flow charting, pseudocode, object-orientation, decisions and looping program constructs, collections and arrays, and recursion. Lecture topics will be reinforced with hands-on coding, testing, debugging, and documentation exercises. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course

Required Prerequisites: MTH 111, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: CIT 122A

Course: CIT 118, Microsoft Office - Word Intro  Division: Business
Description: This course is designed to provide students with an introduction to word processing using Microsoft Word. Skills students will learn include preparing documents, formatting characters and paragraphs, and formatting pages. This course requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). This software is available at campus computer labs. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course

Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 122A

Course: CIT 119, Microsoft Office - Word  Division: Business
Description: This course teaches students how to use Microsoft Word and prepares them to pass the Microsoft Office Specialist (MOS) Word certification exam. Skills students will learn include navigating in a document, customizing and formatting text, paragraphs, and pages, inserting objects, maintaining and proofing documents, performing mail merge operations, document sharing and management, tracking and referencing documents, and managing macros and forms. Students enrolling in this course will take the Microsoft Office certification exam. This course requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). This software is available at campus computer labs. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course

Required Prerequisites: Keyboarding skills required  Co-Requisites: None  Recommended Prerequisites: CIT 122A

Course: CIT 122A, Computer & Internet Basics I  Division: Business
Description: Students will learn the essential skills required to use a computer with the Windows operating system. The student will learn to interact with the Windows desktop to access software and data. The course emphasizes the importance of file and folder maintenance. The course also includes introductions to the World Wide Web, e-mail and searching. Students completing this course will master skills required for online courses. This course requires a Windows PC or a Mac with a Windows partition. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course

Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 124, Microsoft Office - PowerPoint  Division: Business
Description: This course teaches students how to use Microsoft PowerPoint and prepares them to pass the Microsoft Office Specialist (MOS) PowerPoint certification exam. Skills students will learn include preparing and modifying a presentation, using help, formatting slides and inserting elements in slides, creating tables, charts, and SmartArt graphics, using slide masters and action buttons, applying custom animation and setting up shows, and integrating, reviewing, protecting and saving presentations. Students enrolling in this course will take the certification exam. This course requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). This software is available at campus computer labs. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course

Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Recommended competency: Basic keyboarding, Windows skills
Course: CIT 156, CompTIA A+ Certification I  Division: Business
Description: This course, in conjunction with CIT 157, covers the objectives of the CompTIA A+ Certification exam. CIT 156 concentrates primarily, but not exclusively, on the Essentials exam requirements including: personal computer components, laptop and portable devices, operating systems, printers and scanners, networks, security, safety and environmental issues, communication and professionalism. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: Windows skills

Course: CIT 157, CompTIA A+ Certification II  Division: Business
Description: This course, in conjunction with CIT 156, covers the objectives of the CompTIA A+ Certification exam. CIT 157 concentrates primarily, but not exclusively, on the Practical Application exam requirements, including: personal computer components, laptop and portable devices, operating systems, printers and scanners, networks, security, safety and environmental issues, communication and professionalism. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 156

Course: CIT 160, Cisco Internetworking I  Division: Business
Description: This course, in conjunction with CIT 161, CIT 260 and CIT 261 provides the necessary preparation to pass the Cisco CCNA Routing & Switching Exam (Cisco Certified Network Associate). The following topics are covered in detail: The OSI Model, LAN topologies and protocols, logical addressing and internetworking devices. This course utilizes the Cisco Networking Academy "Exploration: Network Fundamentals" curriculum and integrates online curriculum, classroom activities and hands-on lab exercises. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 156

Course: CIT 161, Cisco Internetworking II  Division: Business
Description: This course, in conjunction with CIT 160, CIT 260 and CIT 261, provides the necessary preparation to pass the Cisco CCNA Routing & Switching Exam (Cisco Certified Network Associate). The following topics are covered in detail: VLSM, Cisco CLI, IOS, router configuration, static routing, dynamic routing protocols including RIPv1, RIPv2, OSPF, EIGRP, NAT/PAT and DHCP. This course utilizes the Cisco Networking Academy "Exploration: Routing Protocols and Concepts" curriculum and integrates online curriculum, classroom activities and hands-on lab exercises. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: CIT 160, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 170, Microsoft Office - Access  Division: Business
Description: This course introduces database management using Microsoft Access. Students will design, construct, and administer databases. Students will create and modify database objects including tables, queries, forms and reports. Students will enter, delete, modify, import, and export data. Students will configure database features such as security and backup and will evaluate data integrity and design quality. Course content is mapped to the current Microsoft Office Specialist (MOS) Access learning objectives and students enrolled in this course will take the certification exam. This course requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). This software is available at campus computer labs. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 100 or CIT 210

Course: CIT 178, Relational Databases  Division: Business
Description: This course introduces students to core database concepts including data, data types, and relationships. Students will interpret and create relational data structures and use SQL language to perform basic create, read, update, and delete operations. Students will recognize the value of optimized data and produce normalized designs. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: Basic computer skills with the ability to manage file and folder structures
Course: CIT 180, HTML and CSS Programming  Division: Business  
Description: Students in this course will develop skills in HTML5 web development with a focus on CSS3 styling techniques. An emphasis is placed on developing solid coding practices as well as providing for ADA compliance requirements and W3C HTML and CSS validation. Students will develop three web projects during the course. A brief introduction to JavaScript and other web related extended topics are included. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 122A or equivalent skills. Recommended competencies: Placement into ENG 11/111 and MTH 111

Course: CIT 188, Data Sources  Division: Business  
Description: This course continues with relational data concepts introduced in CIT 178 with a focus on administration, backup, and security. The course then extends to other data sources and connection technologies. Students will be able to identify and evaluate data options and access data via code. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 110 and CIT 178 or CIT 248  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 190, JavaScript Programming  Division: Business  
Description: Students in this course develop web client scripting skills using JavaScript and jQuery. Students use variables, decisions, loops, functions, objects, and other programming concepts as they add robust and powerful interactivity to web pages. Students create web solutions integrating HTML, CSS, JavaScript, jQuery, JSON, and Ajax technologies. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 110 and CIT 180-which may be taken concurrently or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 195, .NET App and Game Programming  Division: Business  
Description: The student is introduced to .NET application and game development. Students use Visual Studio to develop applications and games featuring XAML-based and graphical interfaces, user devices such as game controllers, and database integration. Object-oriented concepts including encapsulation, inheritance, polymorphism, collections, delegates, and events are included. Application design patterns and proper documentation are emphasized. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 110.  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: Windows file management skills, HTML and CSS coding skills.

Course: CIT 208, Mobile Apps-Responsive Design  Division: Business  
Description: This course will provide an in-depth look into responsive web design with HTML5. Students will focus on a semester long development effort to create truly engaging websites for both mobile and desktop clients. Students will garner a better understanding of the inner workings of HTML5 while deriving a sense of what it means to develop for a larger device ecosystem. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 190  Co-Requisites: None  Recommended Prerequisites: CIT 195

Course: CIT 210, Microsoft Office - Excel  Division: Business  
Description: This course deals with a comprehensive study of the most current electronic Excel spreadsheet software, Microsoft Office Excel and the business applications which can be created and used with the software. The entry of data with different formats, formula creations, file transfer of data, database management, graphing, data tables, solver programs, and an introduction to macros will be covered. Course content is mapped to the current Microsoft Office Specialist (MOS) Excel learning objectives and students enrolled in this course will take the certification exam. This course requires MS Office 2016 on a Windows computer (or on a Mac with a Windows partition). A 180-day version of MS Office may be included in the book bundle when purchased through the bookstore. The software is also available at campus computer labs. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: BUS 105, CIT 122A, MTH 23
Course: CIT 213, Networking Technologies  Division: Business
Description: This course covers terminology, topologies and media necessary for LANs and WANs. The OSI model will be studied and identified to better enhance the understanding of how various parts work together. Included is an in-depth study of TCP/IP and the characteristics for maintaining a network and ensuring its security. This course maps to the CompTIA Network certification exam objectives. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 156 and CIT 157, both may be taken concurrently

Course: CIT 215, Windows Server Environment  Division: Business
Description: In this course students will learn about the latest Windows Server operating system. Students will learn and install many server roles and features. Concepts studied include Windows Installation Active Directory Domain Services, DNS, DHCP, PowerShell and Group Policy. Students will have an opportunity to work with a Server Core Installation and virtualization using Hyper-V. Account management will be studied and students will set up users and groups, and configure access control lists. The course maps to the Microsoft 70-410 installing and configuring Windows Server 2012 R2 certification exam. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 213  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 216, Computerized Acctg Systems  Division: Business
Description: This course is designed to give the student experience with setting up an accounting system on the computer. QuickBooks software will be used. Accounts receivable, accounts payable, general ledger, inventory, and payroll will be covered. It is recommended that ACC 121 be taken before this class. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ACC 121

Course: CIT 218, Web APP Programming ASP .NET  Division: Business
Description: In this course students will develop multi-tier web applications using dynamic web pages and the ASP.NET framework. The architecture of the web application will be based on the MVC pattern with students writing client-side and server-side code to create a functional, consistent, and robust web application. As a capstone project, the students will develop and deploy a functional web application. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 208, CIT 248 or CIT 255  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 233, Project Management  Division: Business
Description: This course is intended for CIT students and business professionals who need to manage project activities or resources on time, on budget, and according to performance standards. Students use Microsoft Project as a project management tool to schedule tasks, and monitor resources, cost, and project progress. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Windows knowledge

Course: CIT 240, Network Security Management  Division: Business
Description: This course examines the fundamentals of computer network security and explores current practices for securing network resources. Course content is mapped to the CompTIA Security+ certification exam objectives, which include network security, compliance and operational security, threats and vulnerabilities, application, data and host security, access control and identity management, and cryptography. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 242, Windows Client Administration  Division: Business
Description: In this course students will study the Windows Client operating system. Course topics include: installing Windows; implementing and conducting administration of resources; implementing, managing, monitoring, and troubleshooting hardware devices and drivers; configuring and troubleshooting the desktop environment; implementing, managing, and troubleshooting network protocols and services. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Recommended competency: Basic Windows skills
Course: CIT 246, Windows Server Infrastructure  Division: Business
Description: Students taking this course will learn how to setup, configure, and maintain a Windows Server Infrastructure. Topics covered include operating systems, deployment, maintenance and administering and troubleshooting DHCP, DNS, Network Access Protection, IPSec, and Virtual Private Networks. System performance and reliability will also be studied. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 215  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 247, Enterprise Solutions  Division: Business
Description: This course is the capstone for the CIT Infrastructure associates degree program. In this course students will gain practical experience building enterprise solutions using a team based approach. These solutions will include concepts such as high-availability, failover clustering, shared storage, virtualization, business continuity, disaster recovery, and cloud computing. Students will apply their knowledge of networking, security, and Windows Active directory in the design and implementation of these projects. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 246  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 255, .NET Object-Oriented Prog  Division: Business
Description: The student builds on .NET programming fundamentals learned in CIT 195, focusing on object-oriented concepts throughout the course including extensive work with generics, interfaces, unit testing, and various design patterns. Development of applications that feature robust user interfaces, multiple forms of persistence, and integration with technologies beyond .NET is emphasized throughout each project in the course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 178, CIT 195  Co-Requisites: None  Recommended Prerequisites: CIT 190

Course: CIT 256, Linux Administration  Division: Business
Description: This is a hands-on class that covers the concepts related to Linux installation and system administration. Students will install and administer a Linux operating system using removable hard drives. It is intended for students who plan to work at Linux system administrators. It is also intended for those who plan to take one or more certification tests as part of their professional preparation. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 213  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 260, Cisco Internetworking III  Division: Business
Description: This course, in conjunction with CIT 160, CIT 161, and CIT 261, provides the necessary preparation to pass the Cisco CCNA Exam (Cisco Certified Network Associate). The following topics are covered in detail: LAN switching, VLANs, VTP, DTP, STP, inter-VLAN routing and basic wireless. This course utilizes the Cisco Systems Networking Academy "Exploration: LAN Switching and Wireless" curriculum and will integrates online curriculum, classroom activities and hands-on lab exercises. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: CIT 161  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 261, Cisco Internetworking IV  Division: Business
Description: This course, in conjunction with CIT 160, CIT 161, and CIT 260, provides the necessary preparation to pass the Cisco CCNA Exam (Cisco Certified Network Associate). Topics covered in detail: WAN design, HDLC, PPP, Frame Relay, ATM, cable, network management and CCNA exam review. This course utilizes the Cisco Systems Networking Academy "Exploration: Accessing the WAN" curriculum and integrates online curriculum, classroom activities, and hands-on exercises. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: CIT 260, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 275, .NET Solutions Development  Division: Business
Description: In this course students, working in teams, will create computer and web application solutions based on the .NET framework, and incorporating other technologies. Agile development strategies with industry patterns and practices are emphasized. A completed capstone project is developed and presented to a review group. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 188 or CIT 248 and CIT 255  Co-Requisites: None  Recommended Prerequisites: None
Course: CIT 280, Systems Analysis and Design  Division: Business
Description: This course is the capstone course in the CIT developer and CIT general associates degree programs. It introduces students to the phases of the systems development lifecycle. Students will gain practical knowledge in systems analysis through participation in a team-based software project. Students will conduct a feasibility study, perform requirements analysis, and model objects and data, communicating effectively throughout the project. Students will apply their knowledge of database design and programming, and they will create a user interface using elements of traditional and modern systems analysis methodologies. Students will utilize project management software to iterate through the software development lifecycle. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CIT 188 or CIT 248, CIT 233, CIT 255  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 290, CIT Internship  Division: Business
Description: Work experience is an integral part of the CIT student’s program. In this course, students are placed in settings that utilize their business and CIT skills. Students will work 150 hours during the semester in a paid or non-paid, supervised on-the-job training experience. Students must meet with their academic advisor and submit a resume for review before they will be allowed to enroll in this course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 20 credits with a minimum of 3.0 GPA in CIT courses and instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 291, Web Developer Internship  Division: Business
Description: Work experience is an integral part of the Web Developer Certificate program. In this course, students are placed in settings that utilize their web installation and development skills as well as business and CIT skills. Students will work 150 hours during the semester in a paid or non-paid, supervised on-the-job training experience. Students must meet with their academic advisor and submit a resume for review before enrolling. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CIT 292, Support Specialist Internship  Division: Business
Description: Work experience is an integral part of the Support Specialist Certificate program. Students are placed in settings that utilize their technical, business applications, and interpersonal communications skills. Students will work 150 hours during the semester in a paid or non-paid, supervised on-the-job training experience. Students must meet with their academic advisor and submit a resume for review before enrolling. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 27-30 hours in the Administrative Support Specialist certificate and instructor permission  Co-Requisites: None  Recommended Prerequisites: None

CJ – Criminal Justice

Course: CJ 101, Intro to Criminal Justice  Division: Social Science
Description: The student is introduced to the criminal justice system and the criminal justice process. Includes the history, present structure, current functions and contemporary problems of the police, the prosecution, the courts, corrections, and security agencies. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CJ 202, Police Administration  Division: Social Science
Description: This course will present an overview of public administration with the emphasis on the vitality and capacity for pragmatic change within our American police system. This understanding will be brought about by the comprehensive and analytical study of the structures, processes, and behavior of the typical police infrastructure in the United States. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CJ 101
Course: CJ 211, Criminal Law  Division: Social Science
Description: This course will study the history and nature of criminal law, defenses to criminal conduct, and substantive criminal offenses. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: CJ 221, Juvenile Delinquency  Division: Social Science
Description: This course is a study of juvenile delinquency theories of causation and current prevention programs. It will explore the nature and extent of delinquency and examine suspected causes of delinquent behavior. It will also cover critical issues in juvenile delinquency and examine crucial policies and programs in the Criminal Justice system that address juvenile delinquency. It will also include issues facing juvenile probation officers and it will look at the role of police agencies and their relationship to juvenile courts. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111, SOC 101

Course: CJ 231, Survey of Corrections  Division: Social Science
Description: This course will examine the historical and philosophical development of corrections in the United States. Special consideration is given to the theoretical approaches to changing and controlling criminal behavior. Practical limitations and justification to probation, parole, and the operational functions of institutional supervision are also studied. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: CJ 241, Interview & Interrogation  Division: Social Science
Description: This course will present techniques and methods of obtaining information from victims, witnesses and suspects. It also deals with the laws and court precedents relative to confessions, statements, and admissibility. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CJ 101, placement into ENG 111

Course: CJ 242, Evidence & Criminal Procedures  Division: Social Science
Description: An overview of the criminal court system and the process of a criminal proceeding from incident to disposition and appeal, including the rules of evidence affecting the trial of a criminal case. It also includes an overview of the criminal procedure rules concerning arrest, search and seizure, and interrogation and confession, which regulate law enforcement and protect citizens' rights of privacy and presumed innocence. The course includes pertinent Supreme Court decisions. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CJ 101, placement into ENG 111

CMT – Construction Management

Course: CMT 103, Construction Safety  Division: Construction Technology
Description: Through structured classroom activity, students will learn the role of OSHA in job site safety, demonstrate hazard recognition and risk assessment techniques, demonstrate an understanding of assured equipment grounding conductor programs and the use of GFCIs, understand proper rigging safety procedures and demonstrate use of hand signals. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CMT 107, Construction Supervision  Division: Construction Technology
Description: Students will learn the skills needed for construction management including: business management, estimating and job costing, design and building science, contracts, liability and risk management, marketing and sales, project management and scheduling, the Michigan Residential Code, MIOSHA construction safety standards, and effective communication for construction project management. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: ENG 99 and MTH 23
Course: CMT 207, Construction Cost Estimating  Division: Construction Technology
Description: In this course students will explore topics pertaining to the processes of construction estimating and bidding techniques. Those topics will include, but are not limited to, the discussion and exploration of the identification and quantification of construction materials, labor, and equipment for the construction bidding process. Some computer estimation programs and/or cost data publications will be used to develop estimates. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CAR 103, CIT 100, CMT 107, MTH 111 or higher  Co-Requisites: None  Recommended Prerequisites: ENG 111, may be taken concurrently

Course: CMT 290, Construction Mgmt. Internship  Division: Construction Technology
Description: The purpose of this internship is to provide on-the-job training for the student who wishes to pursue a career in a technical field of study. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10 hours per week in this paid, supervised on-the-job training experience. In addition to the required 150 hours at a work site, students participate in semi-monthly seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 30 credits of program specific courses with a GPA of 2.0 or higher  Co-Requisites: None  Recommended Prerequisites: None

COM – Communications

Course: COM 101, Introduction to Communication  Division: Communications
Description: Designed to introduce the student to the basic components of the communication process, this course emphasizes interpersonal communication, perception, meaning, theory and an introduction to mass communication. The direct application of theories to the student's individual career choice or personal life experience is stressed. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: COM 111, Public Speaking  Division: Communications
Description: Designed to acquaint students with the fundamentals of the discipline and to give them confidence in speech situations, this course considers voice, platform technique, message organization and audience analysis. Emphasis is upon the formal speaking situation. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: COM 121, Broadcasting Practicum I  Division: Communications
Description: Practical experience in underwriting, announcing, script writing, "on-air" studio operations and the management of the non-profit college radio station are all part of this course. Internships with local radio stations may be arranged. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: College level reading and writing skills

Course: COM 122, Broadcasting Practicum II  Division: Communications
Description: This course continues practical experience in underwriting, announcing, script writing, "on-air" studio operations and management. Internships with local radio stations may be arranged. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: COM 121

Course: COM 150, Global Information Strategies  Division: Communications
Description: This course explores information, its role in society and the specific types of information resources available to today's learner. Students will identify information resources based on research need and discover the digital tools available to locate these resources. Criteria for critically evaluating resources will be applied. Students will implement advanced research strategies using various online research tools. Current technologies for organizing and sharing information will be examined. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: ENG 111 or permission of instructor  Co-Requisites: None  Recommended Prerequisites: Ability to use computers and familiarity with basic computer software, including Microsoft Word, Excel, and Internet browsers. Basic reading and writing skills, appropriate placement scores.
**Course:** COM 201, **Mass Communication & Culture**  
**Division:** Communications

**Description:** This course presents various perspectives on the analysis, evaluation and understanding of communication in mass culture. Emphasis is on critical thinking and analysis of communication situations with relevance to the student's individual career choice or life experience. Group 2 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

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**CUL – Culinary**

**Course:** CUL 100, **Intro to Professional Cooking**  
**Division:** Business

**Description:** This course is designed for students seeking a career in Culinary Arts. The course will provide a broad orientation to aspiring chefs so that they will better understand what is required to succeed in the industry. Emphasis will be placed on professionalism, safety and sanitation, use of commercial equipment and small wares, basic knife skills, and identification of food products. Students will be required to purchase an initial set of uniforms for this course. Students will be required to purchase a set of hand tools for skills development. Students must receive an overall GPA of 2.5 to pass the class, as well as pass the final practical with a minimum of 2.5. Group 2 course.

**Credit Hours:** 1  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Recommended competencies: COMPASS scores: Pre-Algebra, 21; Writing, 70; Reading, 82

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**Course:** CUL 101, **Today's Hospitality Industry**  
**Division:** Business

**Description:** This course is designed for students who wish to pursue a career in the hospitality industry. It introduces the student to segments of the industry and the different career tracts within each one. The course will acquaint the student with the rigors of hospitality and the particular nature of this people-oriented industry. A foundation course in the study of resort and resort settings, the course provides the student with an awareness of the unique problems associated with the development, management and marketing of a resort. Also, the seasonal nature of most resorts and the challenges presented by this issue are discussed. The nature and unique characteristics of the hospitality industry as a career choice are discussed. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Recommended competencies: COMPASS scores: Pre-Algebra, 21; Writing, 70; Reading, 82

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**Course:** CUL 110, **Safety and Sanitation**  
**Division:** Business

**Description:** This course is designed for students who wish to pursue a career in culinary arts or hotel and restaurant management. With today's complex safety and health laws, it is essential as well as required by many firms to have an in-depth understanding and certification in safety and sanitation. This course provides the students with both. Students study food service safety including fire safety and kitchen and dining room safety. Students will earn an American Red Cross Certificate in adult CPR. Students also learn all aspects of food service sanitation and earn both the Michigan and NRA Educational Institute Sanitation Certificate. Group 2 course.

**Credit Hours:** 2  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

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**Course:** CUL 111, **Professional Cookery**  
**Division:** Business

**Description:** An intensive study of foods and cooking, this course exposes the student to commercial equipment, quality food production, and professional presentation. It provides the chef training student with the practice and theory involved in the preparation of foods in a commercial operation. Basic cooking terminology, methods and procedures are introduced. The course also includes kitchen safety and sanitation, knife and equipment identification and technique, preparation of stocks, soups, and mother sauces, meats, poultry and seafood, and the presentation of a complete meal. Uniforms and knives will need to be purchased through the department for this course. Group 2 course.

**Credit Hours:** 6  
**Contact (Billing) Hours:** 12  
**Group Attribute:** Group Two Course

**Required Prerequisites:** CUL 110, may be taken concurrently  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

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**Course:** CUL 118, **Introduction to Baking**  
**Division:** Business

**Description:** This course is designed for students seeking a career in Culinary Arts. In this intensive study of fundamental baking techniques, students will become familiar with baking operation and production. This course covers fundamental pastry and dessert recipes as well as the preparation of yeast dough. Also included are tortes, pies, tarts, and other desserts. Group 2 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 8  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None
Course: CUL 212, Purchasing and Receiving  Division: Business
Description: An overview of how food is purchased, received, stored and distributed is discussed in this course. Focus is on product identification, availability, seasonality, price, quality, and freshness. The course also includes the purchasing practices and controls that help to insure a correct product specification. Proper forms for ordering, issuing, inventory and cost controls are used. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CUL 190, Culinary Internship  Division: Business
Description: A culinary internship integrates academics with professional work experience. Students earn college credit while working in fine dining properties, gaining valuable hands-on experience. Students are encouraged to contact the internship coordinator at least two months prior to the semester they are requesting placement. Culinary internships are 40 hours per week for an eight-week summer session. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: CUL 110, CUL 111, CUL 118, CUL 213 and Culinary staff approval  Co-Requisites: None  Recommended Prerequisites: None

Course: CUL 210, Nutrition for Culinary Arts  Division: Business
Description: This course is designed for students who wish to pursue a career in culinary arts. Healthy eating is attracting more attention as Americans struggle with the problems of obesity and disease prevention. In this atmosphere it is essential for prospective chefs to be aware of the needs of their customers. This course presents the principles of nutrition within the context of professional food preparation. Various ingredients and their role in good nutrition, spa cuisine, planning healthy menus and alternative eating styles are discussed. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: CUL 211, Menu Planning  Division: Business
Description: No one will argue that the menu is the soul of a restaurant. This course provides the student with the understanding of the menu as the center of the food outlet, around which is built the facility and staff. Menu theme is the driver for equipment purchases, staffing, location and floor plan. An understanding of this complex item is vital to anyone involved in Culinary Arts. This course is designed to familiarize the student with all aspects of planning a modern menu - from market research to the physical layout of the document. Various types of menus are covered including A'La Carte, Table d'Hote, Institutional and Special Occasion. Menus will be analyzed for effectiveness and pricing strategies along with the menu planning. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: CUL 110, CUL 111  Co-Requisites: None  Recommended Prerequisites: None

Course: CUL 213, World Cuisine  Division: Business
Description: This course is designed for the student who wishes to be a professional chef. It comprises the study, preparation and presentation of foods and cooking methods from selected countries. These countries have been selected based on their current popularity in restaurants. In this course, students develop knowledge and basic understanding of ethnic cooking including the cooking styles of Italy, France, Mexico, China, and various other Asian and American regions. In the process of learning these multi-national cuisines, the student develops additional technical skills in the preparation of the different foods. Group 2 course.
Credit Hours: 6  Contact (Billing) Hours: 12  Group Attribute: Group Two Course
Required Prerequisites: CUL 110, CUL 111  Co-Requisites: None  Recommended Prerequisites: None

Course: CUL 215, Garde Manger  Division: Business
Description: This course is designed for students who wish to pursue a career in culinary arts. As America's sophistication regarding food has increased, it is essential that students training to be chefs be exposed to the most up-to-date cooking and presentation techniques. Students prepare cold foods for display: pates, galantines, terrines and mousses. Decorative garnishes and other functional banquet presentations are covered in this course. Meat and seafood fabrication is also practiced. Projects made will be used and displayed at various functions and events at the Great Lakes Campus and at other special occasions. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 8  Group Attribute: Group Two Course
Required Prerequisites: CUL 110, CUL 111, CUL 118, CUL 213  Co-Requisites: None  Recommended Prerequisites: None
Course: CUL 217, Kitchen and Dining Room Mgmt  Division: Business
Description: This course is designed for students who wish to pursue a career in the food service industry. Its focus is the control of the dynamics of the kitchen and dining room in a modern restaurant. In the highly competitive restaurant business, it is necessary for prospective food and beverage professionals to have a thorough understanding of this aspect of the industry. Many restaurants fail because of a lack of coordination between the front and back of the house. The course focuses on the basic principles of management as applied to kitchen and dining room situations. Other topics include TQM management techniques, team building, motivational techniques, stress management, production management, and styles of table service. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CUL 101

Course: CUL 218, Advanced Baking  Division: Business
Description: This course is designed for students seeking a career in Culinary Arts. In this intensive study of advanced baking techniques, students will become familiar with baking operation and production as well as dessert and pastry finishing and plate presentation. This course covers more advanced pastry and dessert recipes as well as the preparation of yeast dough. Pastries, desserts and dessert sauces will be served to guests at Lobdell's, the Great Lakes Culinary Institute's teaching restaurant. Cake icing and finishing is also included as are tortes, mousses, Bavarians, tarts and other desserts. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 8  Group Attribute: Group Two Course
Required Prerequisites: CUL 110, CUL 118  Co-Requisites: None  Recommended Prerequisites: None

Course: CUL 221, Chocolate and Cake Design  Division: Business
Description: This course is designed for students who wish to pursue a career in pastry arts. It is designed for students that would like to expand their creative talents in areas of chocolate artistry and cake decorating. In this course students will learn through lecture, demonstrations and lab work the characteristics of chocolate, chocolate tempering and modeling, candies, fillings, centerpieces, molds & decorations. The cake decoration portion of the course will cover buttercream recipes, history of cake decorating and tools, preparation of boards, papers, columns, boxes, etc., the art of icing a cake, basic cake covering using combs and spatulas, basic piping skills and the use of decorating tips, border skills, floral piping skills, art of swag and drapery applications, art of writing and coloring on a cake. Course includes how to create and display wedding cakes, icings, fondant, pastillage, and gum paste. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 8  Group Attribute: Group Two Course
Required Prerequisites: CUL 118  Co-Requisites: None  Recommended Prerequisites: None

Course: CUL 295, Contemporary Service & Cuisine  Division: Business
Description: This course focuses on practical hands-on training. Students rotate through the front-of-the-house and the restaurant kitchen in this intensive semester-long course. Front-of-the-house students learn various styles of table, wine and beverage service. Menu merchandising is stressed throughout the course. Guest relations and timing of service are also emphasized as advanced students serve lunch to guests in Lobdell's, the Great Lakes Culinary Institute's teaching restaurant. Heart-of-the-house students learn classical food preparation preparing designated menu items. Other areas covered include recipe construction and costing, the use and care of equipment, the pressure of a la carte preparation and service, and the effective handling and use of supplies. Group 2 course.
Credit Hours: 12  Contact (Billing) Hours: 24  Group Attribute: Group Two Course
Required Prerequisites: CUL 110, CUL 111, CUL 211, CUL 213  Co-Requisites: None  Recommended Prerequisites: Recommended competency: Basic keyboarding and computer skills

DD – Drafting & Design

Course: DD 101, Print Reading and Sketching  Division: Technical
Description: Students will learn to read engineering drawings of products and tooling used in today's manufacturing. Basic drawing format and layout are presented using product, tooling assembly, and tooling detail drawings. Students learn methods of three dimensional shape description, dimensioning and tolerancing. Types of fasteners along with related terminology and manufacturing processes are presented. An overview of common manufacturing processes, material specifications, and welding symbols are presented. Students learn the presentation skills of orthographic projection, isometric and oblique pictorial drawings using straight line and free hand sketches. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: DD 110, Basic Metallurgy  Division: Technical
Description: This course presents the making and forming of steel and the classification of steel and cast iron. Mechanical and physical properties are presented along with hardness and tensile testing labs. Principles of alloying, crystal structure, and the iron-carbon diagram help students understand how annealing, hardening, and tempering processes alter the mechanical properties of steel. Non-ferrous metallurgy is presented with an emphasis on aluminum. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: DD 170, CADD/Computer Modeling  Division: Technical
Description: This course is a graphic communication course using 3D parametric modeling techniques. Topics include 3D modeling using SolidWorks software in an engineering design environment. Students will also develop 2D drafting skills including proper organization and layout of component drawing views, dimensioning and tolerancing, sectioning and detailing, detail descriptive geometry and rapid prototyping. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or MTH 23A and MTH 23B

DNC – Dance

Course: DNC 101, Beg. Dance: An Exploration  Division: Humanities
Description: This course will introduce the major disciplines of dance: ballet, jazz, and modern. Basic dance skills will be acquired through the practice of exercises, steps, and techniques. This course is designed for those with little or no background in dance. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: DNC 110, Modern Dance I  Division: Humanities
Description: This course is designed to introduce students to the physical training and the creative thought process involved in executing modern dance as an art form. This course will consist of technique, improvisation, and creative problem solving through movement. Modern dance and its relationship to music and the historical development of modern dance will also be explored. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: DNC 101 or previous experience

Course: DNC 111, Modern Dance II  Division: Humanities
Description: This course is designed as an extension of Modern Dance I. This class will consist of increasing proficiency in modern dance through extended studies in technique, improvisation, creative problem-solving, and performance. Dance history and critical perspectives in dance will also be explored. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: DNC 110 or previous experience

Course: DNC 120, Choreography and Performance  Division: Humanities
Description: Study choreography by participating in an instructor-led choreographed dance, created through structured improvisation and creative problem-solving techniques. Students will also create and develop their own dances through the exploration of a wide range of approaches to choreography. Performance and its relationship to community and cultural values will also be explored. The culmination of the class work will be a dance performance for the public. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: DNC 111
ECO – Economics

Course: ECO 201, Principles of Macroeconomics  Division: Social Science
Description: This principles level course provides an in-depth overview and analysis of macroeconomic theory and concepts; and applies them to the contemporary economic issues, problems, and policies in the United States and other economies. Topics include the nature and scope of economics; national income accounting; government revenues, expenditures, and national debt; unemployment, inflation, and interest rates; economic growth; and monetary, fiscal and international trade policies. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: MTH 23  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111. It is recommended that students take ECO 201 before ECO 202

Course: ECO 202, Principles of Microeconomics  Division: Social Science
Description: This principles level course analyzes microeconomic theory and concepts; and applies them to contemporary economic issues, problems, and policies. Topics include supply and demand analysis, productivity and the firm's costs of production, price and output determination under various market structures, government interventions in markets, factor allocation and pricing, and international trade. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: MTH 23  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111. It is recommended that students take ECO 201 before ECO 202

EDU – Education

Course: EDU 101, Introduction to Teaching  Division: Social Science
Description: This course will serve as an introduction to teaching as a career. It will provide an overview of students' behaviors and effective teachers' responsibilities in preparation for further study in the field of education. This course includes 30 hours of classroom observation in a K-12 classroom. Instructor permission is needed for non-high school graduates. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

EET – Electronics Technology

Course: EET 102, Intro to Engineering Tech  Division: Technical
Description: This course is designed to give students an overview of engineering technology and the career options this profession provides. This course highlights the technical specializations within the Engineering Technology degree at NMC. Course topics also include engineering design methods, project management principles and practices, team work skills, engineering ethics, and the role of engineering in global and environmental issues. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 103, Electrical Studies I  Division: Technical
Description: Explore the fundamentals of electricity and electronics by developing introductory analysis, construction and troubleshooting techniques for DC and AC circuits. Safe electrical practices will be emphasized throughout the course as the student constructs circuits from schematics and diagrams using proper wiring and soldering techniques. Electrical measurements will be performed using multimeters and oscilloscopes. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: MTH 23  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 104, Electrical Studies II  Division: Technical
Description: A systems level approach to electronics and electrical devices will be used to analyze semiconductor applications including integrated circuits, power supplies, transistors, amplifiers, and digital logic families. Circuits will be bench tested, and integrated with others to meet system requirements. Design modifications, circuit improvements, component protection and application to other areas of engineering technology will be emphasized as designs are developed into working prototypes. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EET 103  Co-Requisites: None  Recommended Prerequisites: None
Course: EET 161, Fundamentals of Light & Lasers  Division: Technical
Description: This course introduces the elements of a laser, operation of a helium-neon gas laser, laser physics, optical-cavities, properties of laser light and a survey of laser systems. Safety procedures concerning lasers and related equipment are presented in this course. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: MTH 111 or higher  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 212, Elements of Photonics  Division: Technical
Description: Elements of Photonics builds upon and applies principles presented in Fundamentals of Light and Lasers. The course includes modules on operational characteristics of lasers, specific laser types, optical detectors and human vision, principles of optical fiber communications, photonics devices for imaging, storage and display, and laser welding and surface treatment. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: EET 161  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 221, Industrial Controls  Division: Technical
Description: This course studies control circuits, electrical schematics and line diagrams. Motor circuits utilizing motor starters, contactors, timers and counters are used to demonstrate control circuitry. Industrial control devices are examined, including solid-state control devices, electro-mechanical relays, proximity sensors, photoelectric sensing devices and programmable logic controllers. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EET 103 or ELE 105  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 232, Programmable Logic Controllers  Division: Technical
Description: This course studies programmable logic controllers (PLCs). Basic models and complete applications are applied to control inputs and outputs of PLCs. Ladder logic and device wiring techniques are studied, along with advanced program instructions such as counters, timers, sequencers and integer moves. Input/output devices are used to examine PLC program logic during the control process. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EET 221  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 233, PLC Applications I  Division: Technical
Description: This course is a study of the integration of program styles and components used in industry. Program structures and instructions will be used in lab projects to simulate how PLCs can be used to create a variety of useful functions. A mixture of textbook and component manuals will be used to learn the necessary information to complete these functions. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EET 232  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 234, PLC Applications II  Division: Technical
Description: This course is a continuation of the study of the integration of program styles and components used in industry. Program structure and project development will be studied. Installation of different types of components integrated with PLCs will also be studied. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EET 233  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 260, System Engineering in Practice  Division: Technical
Description: This class introduces students to the practice of system design and development. Students apply specific methodologies for problem-based learning and project management. Technical content from prior courses is applied to address challenges and create solutions. Student teams create prototypes and communicate results with classroom activities supporting teamwork, project planning, requirements analysis, design, development, testing, demonstration, and reporting. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: EET 102, EET 103, CIT 110  Co-Requisites: None  Recommended Prerequisites: AVF 141 or RAM 120 or WSI 200
Course: EET 290, Engineering Tech Internship  Division: Technical
Description: The purpose of this internship is to provide on-the-job training for the student who wishes to pursue a career in a technical field of study. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10 hours per week in this paid, supervised on-the-job training experience. In addition to the required 150 hours at a work site, students participate in semi-monthly seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 30 credits of program specific courses with a GPA of 2.0 or higher  Co-Requisites: None  Recommended Prerequisites: None

Course: EET 304, Marine Electronics  Division: Technical
Description: Marine Electronics focuses on the systems, applications, electronics, and safety requirements specific to the marine and ROV environments. The design, repair and integration of cabling, tether, communication devices, sensors, and components into electrical systems will be emphasized. Students will use test equipment and protocols to develop troubleshooting methods to analyze and integrate this technology. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EET 104  Co-Requisites: None  Recommended Prerequisites: None

EGR – Engineering

Course: EGR 101, Introduction to Engineering  Division: Science & Math
Description: This course is a general overview of the field of engineering. Emphasis is on curricula, categories of engineering and the role of the engineer. Required for all first-year students in the engineering program. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: EGR 113, Engineering Graphics I  Division: Science & Math
Description: This course is designed to satisfy the engineering graphics requirement for most engineering majors. Topics covered include the principles of orthographic projection, auxiliary views, sectional views, sketching; relationship of lines, planes, and points in space, space vectors and force systems are discussed from an engineer’s point of view. Graphic methods are applied to problem solving and communication of ideas. Two and three dimensional computer graphics are used throughout the course to reinforce the basic concepts. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: EGR 131, Elementary Surveying  Division: Science & Math
Description: This course is designed to satisfy the elementary surveying requirement for a student entering engineering. In this course students will learn the theory involved in plane and geometric surveying including both linear and angular measurement, differential leveling, trigonometric leveling, traverse computations, electronic distant measurements, GPS mapping, topographical mapping and the design of horizontal and vertical curves as related to construction surveys. Students are expected to perform lab experiments in which they demonstrate their knowledge of the concepts learned in lecture, incorporating the basic skill learned in lecture to field settings. Care, adjustment, and use of basic surveying instruments: leveling, taping, horizontal angle measurements, traverse surveys, use of EDM’s, GPS usage, topographic mapping, and layout of horizontal curves. Computer software will be used throughout the semester. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: EGR 131L  Recommended Prerequisites: College level reading and writing skills, MTH 122

Course: EGR 131L, Elementary Surveying Lab  Division: Science & Math
Description: See EGR 131 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: EGR 131  Recommended Prerequisites: None
Course: EGR 201, Statics  Division: Science & Math
Description: This is the first in a three-course sequence in Engineering Mechanics. This course covers those topics usually included under the study of statics, such as forces acting upon a particle and rigid bodies at rest, analysis of structures, frictional forces, centroids and moments of inertia. It also covers shear moment diagrams, tread analysis, trusses and beams. Vector algebra and first semester calculus is used throughout the course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: MTH 141  Co-Requisites: None  Recommended Prerequisites: College level reading and writing skills

Course: EGR 202, Mechanics of Materials  Division: Science & Math
Description: This is the second in a three-course sequence in Engineering Mechanics. This course covers those topics included in the study of mechanics of materials. This includes stress and strain of engineering materials, torsion, Hooke's Law, and shear and moment diagrams, combined stresses, beam deflection, columns, pressure vessels, structural connections and buckling of structures. Vector algebra and differential calculus are used throughout this course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: EGR 201  Co-Requisites: None  Recommended Prerequisites: None

Course: EGR 203, Dynamics  Division: Science & Math
Description: This is the third in a three-course sequence in Engineering Mechanics. This course includes those topics typically covered in dynamics such as kinematics, kinetics, particle and rigid body motion, work-energy principles, impulse-momentum, Newton's Laws of Motion, and harmonic motion. Vector algebra and differential calculus is used throughout this course. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EGR 201  Co-Requisites: None  Recommended Prerequisites: None

EGY – Renewable Energy

Course: EGY 101, Principles of Renewable Energy  Division: Construction Technology
Description: This course highlights industry and governmental perspectives on geothermal, wind, solar, biomass, fuel cells, and other energy sources. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or placement into MTH 111, ENG 111

Course: EGY 105, Sustainable Building Design  Division: Construction Technology
Description: This course provides an introduction to sustainable building practices and is for those students studying for the Environmental Design (LEED) Accredited Professional (AP) Exam. Through structured learning activities, the student will learn about the structure of matter and the material world, whole system thinking, site and natural energy mapping, water resources, building orientation, materials and resources, indoor air quality, innovation and design. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or placement into MTH 111, ENG 111

Course: EGY 115, Residential Energy Efficiency  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn about the principles of energy, building shell construction, air leakage, insulation, windows and doors, heating, lighting, cooling, water heating, health, and safety. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or placement into MTH 111, ENG 111

Course: EGY 141, Solar Photovoltaic Tech I  Division: Construction Technology
Description: Through structured lecture and practical skill building, the student will learn about PV applications, solar radiation, site surveys, system components, system sizing, and reparation of a solar installation proposal. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ELE 101 or EET 103, Recommended competencies: MTH 111 and 121
Course: EGY 143, Solar Thermal Technology I  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn the history of solar thermal heating systems, components, drainback systems, glycol systems, start up and maintenance procedures, savings and performance estimates, system control, monitoring and testing and solar space heating design. Group 2 course. Recommended competencies: Placement into MTH 23 and ENG 111 or co-enrollment in the recommended developmental course in the student’s first semester.
Credit Hours: 3 Contact (Billing) Hours: 4 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or placement into MTH 111, ENG 111

Course: EGY 145, Geothermal Technology  Division: Construction Technology
Description: This course introduces the basic principles of geothermal energy production and technology. Essentials on how to utilize geothermal technology as an energy source will be analyzed and demonstrated. Examples of residential and commercial applications will be shown and reviewed. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 4 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or placement into MTH 111, ENG 111

Course: EGY 151, Solar Photovoltaic Tech II  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn about inverters, PV system sizing, mechanical integration, electrical integration, utility interconnections, permitting and inspection, commissioning, maintenance, troubleshooting and economic analysis. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 4 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or placement into MTH 111, ENG 111

Course: EGY 161, Wind Power Technology  Division: Construction Technology
Description: Through structured classroom discussion, the student will learn about wind applications, measuring the wind, estimating power output of various sizes, economics of wind generation, evaluating technology, towers, interconnection with the utility, siting, installation, operation, performance, maintenance, and safety. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23 or placement into MTH 111, ENG 111

ELE – Electrical

Course: ELE 101, Introduction to Electrical  Division: Construction Technology
Description: This course provides an introduction to the electrical occupations. Through structured classroom and hands-on skill building, the student will learn the orientation to the trade, electrical safety, circuits, theory and an introduction into the National Electrical Code. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 4 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into MTH 111 or higher, or concurrent enrollment in the appropriate developmental math course. Placement into ENG 11/111 or higher, or concurrent enrollment in the appropriate developmental English course

Course: ELE 105, Beg Residential Electrical  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn general information for electrical installations in the residential field to include: electrical symbols and outlets, determining the required number of lighting and receptacle outlets, conductor sizing and connections, switch control, bonding/grounding, ground-fault circuit interrupters and similar devices, and begin calculations for wiring various rooms in a common residential building. Group 2 course
Credit Hours: 3 Contact (Billing) Hours: 4 Group Attribute: Group Two Course
Required Prerequisites: ELE 101  Co-Requisites: None  Recommended Prerequisites: None

Course: ELE 110, Electrical Code Studies I  Division: Construction Technology
Description: This preparatory course reflects many of the important changes that appear in the current edition of the National Electrical Code. The changes are presented as they pertain to Single Family Dwellings, Multifamily Dwellings, Commercial Locations, Industrial Locations, and Hazardous Locations. It is designed to enable the student to learn electrical printreading and become familiar with applicable sections of the National Electrical Code. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ELE 105, MTH 111
Course: ELE 111, Electrical Code Studies II  Division: Construction Technology
Description: This course will help the student in learning to read and interpret the meaning of the Code, and to find information about how to do wiring installations. Upon completion of this course, the student will be able to find information from the Code needed to do residential, commercial, farm, and industrial wiring and to be successful with electrical examinations. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ELE 110  Co-Requisites: None  Recommended Prerequisites: ELE 105

Course: ELE 121, Adv Residential Electrical  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn advanced residential wiring techniques including: workshop circuits, special purpose outlets, gas and oil central heating systems, low-voltage wiring, alarms and security systems, service entrance equipment, overcurrent protection, service entrance calculations, swimming pools, home automation systems, and standby power systems. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ELE 105  Co-Requisites: None  Recommended Prerequisites: None

Course: ELE 125, Pre-Commercial Electrical  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn small sources of electricity, basics of alternating current, AC circuits containing inductance, AC circuits containing capacitors, AC circuits containing resistance-inductance-capacitance, three-phase power, transformers, DC machines, and AC machines. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ELE 121  Co-Requisites: None  Recommended Prerequisites: None

Course: ELE 131, Commercial Electrical  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn commercial building plans and specifications, reading electrical drawings, calculating the electrical load, branch circuits, wiring methods, motor and appliance circuits, feeders, special systems, and working drawings. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ELE 105  Co-Requisites: None  Recommended Prerequisites: None

Course: ELE 135, Adv Commercial Electrical  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn special circuits, panelboards selection and installation, the electric service, lamps and ballasts for lighting, luminaires, emergency, standby and optional standby systems, overcurrent protection, short-circuit calculations, equipment and conductor short-circuit protection, low-voltage remote-control, and the cooling system. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ELE 131  Co-Requisites: None  Recommended Prerequisites: None

Course: ELE 142, Industrial Electrical  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn plans and sitework, the unit substation, feeder bus system, panelboards, trolley busways, using wire tables, signaling systems, basic motor controls, motors and controllers, and motor installation. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ELE 105  Co-Requisites: None  Recommended Prerequisites: None

Course: ELE 146, Adv. Industrial Electrical  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn power factor, ventilating, air conditioning, and other facilities, system protection, lightning protection, site lighting, programmable logic controllers, developing a program for a PLC, fiber optics, hazardous locations, and harmonics. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ELE 142  Co-Requisites: None  Recommended Prerequisites: None
Course: ENG 97, Fundamentals of Reading/Writing  Division: Communications
Description: This course will provide an overview to reading and writing. Students will learn and practice basic reading skills such as annotation, think-aloud, word attack, and main idea identification. Students will also be introduced to the writing process and learn a variety of methods such as free writing, invention, essay planning, drafting, and revision.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Required Prerequisites: Based on placement testing. See advisor  Co-Requisites: ENG 107  Recommended Prerequisites: None

Course: ENG 99, Intro College Reading/Writing  Division: Communications
Description: This is an integrated reading and writing course that gives students the literacy skills they need for college level academic work. Course focus in writing is on the development of organization and clarity, mechanical correctness and sentence structure and variety. Course focus in reading is on the development of vocabulary and comprehension, and reading strategies. Students are required to schedule eight one-hour tutoring sessions through the Writing Center.
Credit Hours: 6  Contact (Billing) Hours: 6  Group Attribute: Required Prerequisites: ENG 97/107 with 2.0 or higher or based on placement testing. See advisor  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 107, Academic Study Methods  Division: Communications
Description: This course is designed to provide students with the opportunity to develop and improve basic college academic survival skills and study methods. Topics include: introduction to student’s own personal learning style, learning theory, active listening, time management, test taking strategies, basic study techniques such as SQ3R, note taking, improving concentration and memory, and controlling the study environment. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 108, Critical Reading Strategies  Division: Communications
Description: The focus of this course is on improving college-level reading skills. Students read and interact with complex texts across different academic disciplines, and learn to employ a variety of reading strategies to enhance comprehension and critical thinking. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  Required Prerequisites: Appropriate placement score or successful completion of ENG 99  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 110, Grammar & Writing  Division: Communications
Description: This course is not a refresher but an intensive inspection of the sentence as it gets used in academic writing. In the eight weeks, students will be invited to think strategically and deliberately about conventions either missed or acquired unconsciously. While developing/intensifying syntactical skill, students will also develop a sound and reasonable language about language. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  Required Prerequisites: ENG 99  Co-Requisites: None  Recommended Prerequisites: Appropriate placement score or successful completion of ENG 99

Course: ENG 111, English/Writing Methods  Division: Communications
Description: This course is to be taken concurrently with ENG 111, and helps facilitate the objectives of ENG 111. Special attention is given to individual student needs in the conventions of standard written prose.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Required Prerequisites: ENG 99 with 2.0 or higher and ENG 108 which may be taken concurrently. Based on placement testing. See advisor  Co-Requisites: ENG 111  Recommended Prerequisites: None

Course: ENG 111, English Composition  Division: Communications
Description: ENG 111 is the first semester of a two-semester composition sequence introducing analytical and information literacy skills that lay a foundation for success in all disciplines. English 111 also introduces and emphasizes rhetorical knowledge (including audience and purpose), invention, and reading/writing processes. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course  Required Prerequisites: Based on placement testing. See advisor  Co-Requisites: None  Recommended Prerequisites: None
Course: ENG 12, English/Writing Methods  Division: Communications
Description: This course is to be taken concurrently with ENG 112 and will help to facilitate the objectives of ENG 112. Special attention is given to individual student needs in the conventions of standard written prose, argumentation, and research.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: None
Required Prerequisites: ENG 111 or ENG 11/111, and ENG 108  Co-Requisites: ENG 112  Recommended Prerequisites: None

Course: ENG 112, English Composition  Division: Communications
Description: This is a writing course based on critical reading from various fields. Writing assignments reinforce skills in summary, analysis, evaluation, and synthesis. Emphasis is on argumentation, research methods, and information literacy. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: ENG 108, ENG 11/ENG 111 OR ENG 111  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 210, Children's Literature  Division: Communications
Description: This introductory class emphasizes craft while giving room for creative talent to emerge in response to open-ended assignments. In this workshop seminar, students will exchange helpful commentary on each other's writing, as well as examine professional fiction to analyze how successful authors achieve their results. The class includes close work with the elements of creative narration: concrete language, story shape and pace, characterization, point of view and setting. Individual conferences will supplement class activities. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 211, Introduction to Linguistics  Division: Communications
Description: This course is designed to acquaint students with modern developments in the science and philosophy of language, and to improve their understanding of culture and language in general. It addresses issues of sound, word formation, syntax, semantics, language acquisition, and more. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 220, Technical Writing  Division: Communications
Description: This course introduces students to a variety of technical writing situations in business, industry, science, and education. It emphasizes audience awareness, research methods, problem solving, critical thinking, professional ethics, and patterns of typical proposals, descriptions, and the requirements of formal reports used in professional writing. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 111  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 221, Creative Writing  Division: Communications
Description: Study and practice of the basic techniques of effective, imaginative writing, focusing on short fiction but with considerable allowance for individual interests. This introductory class emphasizes craft while giving room for creative talent to emerge in response to open-ended assignments. In this workshop seminar, students will exchange helpful commentary on each other's writing, as well as examine professional fiction to analyze how successful authors achieve their results. The class includes close work with the elements of creative narration: concrete language, story shape and pace, characterization, point of view and setting. Individual conferences will supplement class activities. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 112 or permission of instructor  Co-Requisites: None  Recommended Prerequisites: Students should have language skills at least equivalent to ENG 112

Course: ENG 222, Advanced Creative Writing  Division: Communications
Description: An advanced course in imaginative prose narration, ENG 222 provides an intense seminar in which the features of narrative art--characterization, story content, plot development, setting, point of view, and theme--will be developed by using professional models, weekly writing and workshop methods. The course will also rely on frequent on-on-one conferences about each student's writing projects. This course is primarily intended for students and members of the community who are interested in writing for publication and already possess basic competence in prose narration, editing, and responding to manuscripts in progress. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 221 or instructor permission  Co-Requisites: None  Recommended Prerequisites: Students should have language skills at least equivalent to ENG 112
Course: ENG 223, Creative Writing - Poetry  Division: Communications
Description: Weekly writing exercises, peer critique, and one on one mentoring with the instructor provide the foundation for this workshop whose goal is agile, well read poets who feel comfortable working in a variety of forms, as well as reading their own work out loud. Discussion of required readings, emphasis on revision, and experiments to aid the creative process can be expected during the session. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 112 or permission of instructor  Co-Requisites: None  Recommended Prerequisites: Students should have language skills at least equivalent to ENG 112

Course: ENG 224, Journalism Fundamentals  Division: Communications
Description: While the history and role of the press are discussed, this course primarily provides the student with theory and practice in news, editorial and feature writing. Press law and ethics will also be examined. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: Placement into ENG 111  Co-Requisites: None  Recommended Prerequisites: Interest in or curiosity about print and digital media and reporting; knowledge of word processing, preferably in Windows and/or Macintosh environments.

Course: ENG 228, Advanced Writing & Rhetoric  Division: Communications
Description: This course examines ancient rhetoric and applies its principles and analytical tools to the language of everyday life. Using terms and concepts from ancient Greek and Roman rhetoricians, students undertake an intensive exploration of language and its persuasive dimensions. Throughout the semester, students discover how a variety of texts (such as news programs, literary works, advertisements, political slogans, college textbooks, course syllabi, and other official documents) persuade audiences to believe in a particular reality. Formal written analyses will rely on a working knowledge of terms and concepts discussed throughout the semester. In essence, this course is theoretical in nature—as it investigates how language works on consciousness and culture. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ENG 112  Co-Requisites: None  Recommended Prerequisites: Because the class rests on the assumption that students are comfortable with basic research strategies, academic argumentation, and evaluation of secondary sources, students should have completed ENG 112 with a 2.0 or better.

Course: ENG 240, Introduction to Literature  Division: Communications
Description: An introduction to a variety of literary styles, themes, and forms such as fiction, drama, and poetry. Intended to develop an understanding and enjoyment of reading as well as an understanding of current critical approaches to the study of literature. Humanities or English credit. Group 1 course. Prerequisite: Completion of ENG 111 and 112 strongly recommended or instructor permission. Strongly recommended as the FIRST college literature course for those with little or no prior literary study experience.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 241, Mythology  Division: Communications
Description: This course features a study of central and recurring patterns of human concern as revealed in the mythic content of various forms of literature. Examination of archetypal structures embedded in works of culture ranging from ancient Babylonian to contemporary eras is central to course goals and outcomes. Areas to be investigated will include myths of the quest, of power, of origins, of love, and of art. Humanities or English credit. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 242, Women in Literature  Division: Communications
Description: This course features an examination of essays, novels, stories, and poems written primarily (but not exclusively) by 19th and 20th century European and American female authors. In addition, the course introduces students to relevant literary criticism and the historical, cultural context in which writing by and about women has emerged. Humanities or English credit. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 243, Women in Literature  Division: Communications
Description: This course features an examination of essays, novels, stories, and poems written primarily (but not exclusively) by 19th and 20th century European and American female authors. In addition, the course introduces students to relevant literary criticism and the historical, cultural context in which writing by and about women has emerged. Humanities or English credit. Group 1 course.
Course: ENG 245, Native American Literature  Division: Communications  
Description: This is a general introductory survey course that will explore various Native American literary genres, including fiction, non-fiction, biography and critical essays. Students will be encouraged to develop a critical stance toward non-Native depiction of Native literature and to look beneath the surface for hidden socioeconomic messages. Students will evaluate past and present expectations of Native American literature and develop an understanding of new more aggressive and increasingly pervasive forms of Native fiction and non-fiction. Humanities or English credit. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 254, Shakespeare  Division: Communications  
Description: This course is an introduction to representative major dramatic works of Shakespeare and the Elizabethan Age, and includes lecture, film, and discussion. Humanities or English credit. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 256, Environmental Literature  Division: Communications  
Description: This course will explore the changing perceptions and definitions of wilderness and nature in American literature and culture. Students will read and discuss poetry, fiction, and nonfiction by American authors, including Emerson, Thoreau, Muir, Leopold, Austin, Carson, Stegner, Jefferis, Silko, Oliver, Abbey, Snyder, and Williams. We will also explore the interaction between literature and environmental activism, and consider the impact of nature and wildness on American art. Humanities or English credit. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 261, British Literature  Division: Communications  
Description: This course features an intensive reading of works from British authors ranging from the entire span of this literary tradition and including works in various genres. It develops a sense of the evolution of British literature and a facility in careful literary criticism. Humanities or English credit. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: ENG 112 or ENG 220, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 262, American Literature  Division: Communications  
Description: Students in this course study the American tradition, early and modern, in prose and poetry. Selections will emphasize the cultural and intellectual background giving rise to our national literature, the major phases or movements in that literature, and how certain writers transcended those movements to create work of universal value. Humanities or English credit. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: ENG 112 or ENG 220, either can be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: ENG 263, World Literature  Division: Communications  
Description: This course exposes students to a variety of readings drawn from Africa, Asia, Europe, and Latin America, and/or Oceania. While the reading and writing assignments will certainly require close literary analysis, the class will also attempt to situate the works culturally, historically, and theoretically. Humanities or English credit. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: ENG 112 or ENG 222, either may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None
Course: ENG 264, Detective Fiction  Division: Communications  
**Description:** The primary emphases of this course are reading and writing about detective fiction and the historical and cultural development of this genre of literature. Multimedia story formulas analyzed include avenger stories, private eye fiction, police procedurals, gentlemen thieves, psychic detectives, stories of magician detectives and spy fiction. Humanities or English credit. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group One Course
**Required Prerequisites:** ENG 112 or ENG 222, either may be taken concurrently  **Co-Requisites:** None  **Recommended Prerequisites:** Completion of ENG 111 and ENG 112 strongly recommended or instructor permission

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Course: ENG 265, Science Fiction and Fantasy  Division: Communications  
**Description:** The primary emphasis of this course are reading and writing about Science Fiction and Fantasy stories as they are found in a range of cultural tests like print, motion pictures, radio drama, television, and more. Students will learn to identify and discuss mythologies and related symbols, and genre and formula conventions such as icons, stereotypes, rituals, plots, motifs, settings, and more as they investigate the social history of these stories. Humanities or English credit. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group One Course
**Required Prerequisites:** ENG 112 or ENG 220, either may be taken concurrently  **Co-Requisites:** None  **Recommended Prerequisites:** None

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Course: ENG 266, Popular Culture  Division: Communications  
**Description:** The primary emphases of this course center on the critical reading of and writing about popular culture and its historical development in U.S. and world cultures. Topics to be addressed include myth and mythmaking, iconography, stereotypes, rituals, genres and formulas, the mass media and more. Humanities or English credit. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group One Course
**Required Prerequisites:** ENG 112 or ENG 220, either may be taken concurrently  **Co-Requisites:** None  **Recommended Prerequisites:** None

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Course: ENG 267, Film as Literature  Division: Communications  
**Description:** This course offers students the opportunity to examine and critique a selection of films through discussion and writing by employing techniques similar to those used in literary analysis. Humanities or English credit. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group One Course
**Required Prerequisites:** ENG 112 or ENG 220, either may be taken concurrently  **Co-Requisites:** None  **Recommended Prerequisites:** None

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Course: ENV 103, Earth Science  Division: Science & Math  
**Description:** Designed for the student who does not intend to major in a physical science. Subject matter deals with features of the planet earth, astronomy, and weather. The laboratory portion includes a practical study of rocks and minerals as well as a study of topographic, geologic and weather maps. Field trips investigate landforms in the Grand Traverse area. Group 1 lab course.

**Credit Hours:** 4  **Contact (Billing) Hours:** 5  **Group Attribute:** Group One Course
**Required Prerequisites:** None  **Co-Requisites:** ENV 103L  **Recommended Prerequisites:** MTH 08 and ENG 99 or equivalent placement score. Students scoring below ENG 111 levels on the placement test should plan on additional study time.

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Course: ENV 103L, Earth Science Lab  Division: Science & Math  
**Description:** See ENV 103 for course description.

**Credit Hours:** 0  **Contact (Billing) Hours:** 0  **Group Attribute:** Group One Course
**Required Prerequisites:** None  **Co-Requisites:** ENV 103  **Recommended Prerequisites:** None
Course: ENV 104, Life of the Past  Division: Science & Math
Description: This course introduces students to the record of life on Earth. The roles of global change, origins, evolution, and extinction in life history are examined. Great Lakes and North American fossil records with Pre-Paleozoic microorganisms and Paleozoic invertebrates and vertebrates are highlighted. Appearance, evolution, and disappearance of dinosaurs during the Mesozoic Era, human evolution, and the recent demise of the giant Ice Age mammals are analyzed in depth. Laboratory and class activities are included. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 104L  Recommended Prerequisites: MTH 08 and ENG 99 or equivalent placement score. Students scoring below ENG 111 levels on the placement test should plan on additional study time.

Course: ENV 104L, Life of the Past Lab  Division: Science & Math
Description: See ENV 104 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 104  Recommended Prerequisites: None

Course: ENV 111, Physical Geology  Division: Science & Math
Description: This course explores processes which transform planet Earth. Landforms, minerals, rocks, and geologic structures are examined in classroom, laboratory, and field studies which focus on these geologic processes and on the techniques of geology. Lab studies apply the methodology and techniques of geology by introduction of map reading, field and map study, study of surficial processes, and study of minerals and rocks. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: MTH 23  Co-Requisites: ENV 111L  Recommended Prerequisites: None

Course: ENV 111L, Physical Geology Lab  Division: Science & Math
Description: See ENV 111 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 111  Recommended Prerequisites: None

Course: ENV 112, Historical Geology  Division: Science & Math
Description: Rocks and fossils of North America, the Great Lakes and the Grand Traverse region which reveal the physical, chemical, and biological evolution of the planet earth are explored in classroom, laboratory, and field studies (including a required 4-day field excursion to Elliot Lake, Ontario). Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 112L  Recommended Prerequisites: ENV 103 or ENV 111 or GEO 105, MTH 111 and placement into ENG 111.

Course: ENV 112L, Historical Geology Lab  Division: Science & Math
Description: See ENV 112 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 112  Recommended Prerequisites: None

Course: ENV 117, Meteorology & Climatology  Division: Science & Math
Description: Designed to acquaint the student with the science and art of weather analysis, this course includes studies of the basic properties of gases, organization and composition of the atmosphere, basic energy flow, and general weather phenomena that result. Global climates are also investigated. The laboratory portion presents the function and effect of selected physical processes, and includes the use of weather instruments and weather maps. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: MTH 23  Co-Requisites: ENV 117L  Recommended Prerequisites: Students scoring below ENG 111 levels on the placement test should plan on additional study time.

Course: ENV 117L, Meteorology & Climatology Lab  Division: Science & Math
Description: See ENV 117 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 117  Recommended Prerequisites: None
Course: ENV 131, Oceanography  Division: Science & Math
Description: This course explores the origins, structure, and evolution of ocean basins and their role in global climate dynamics. It shall include an investigation of the physical properties that govern waves, currents, tides, air-sea interactions as well as the physical and chemical properties of seawater. It also explores plant and animal life within the oceans including impacts of human activities on the marine environment. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: MTH 23  Co-Requisites: ENV 131L  Recommended Prerequisites: None

Course: ENV 131L, Oceanography Lab  Division: Science & Math
Description: See ENV 131 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 131  Recommended Prerequisites: None

Course: ENV 140, Watershed Science  Division: Science & Math
Description: This course is designed for the learner who wishes to gain an in-depth understanding of watersheds. It will focus on the physical and biological systems that are responsible for the quality and characteristics of a watershed. Human interactions, stewardship, management and impacts on our local water resources will also be explored. The laboratory portion of the course will place emphasis on field investigations and the analysis of data and water samples collected. Basic scientific principles will be incorporated throughout the course. Group 1 lab course.
Credit Hours: 4  Contact (Billing) Hours: 5  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 140L  Recommended Prerequisites: MTH 111, Students scoring below ENG 111 levels on the placement test should plan on additional study time

Course: ENV 140L, Watershed Science Lab  Division: Science & Math
Description: See ENV 140 for course description.
Credit Hours: 0  Contact (Billing) Hours: 0  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: ENV 140  Recommended Prerequisites: None

Course: ENV 270B, Field Mapping Techniques  Division: Science & Math
Description: This course is a one-week field course. It will focus on the fundamentals of map interpretation and generation. Students will gain a basic understanding of the principles of cartography and field mapping techniques employed by various disciplines in the acquisition of spatial data. Group 1 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: MTH 23, instructor permission required  Co-Requisites: None  Recommended Prerequisites: ENG 111, completion of any Science course with laboratory

Course: ENV 270C, Precambrian Geology of MI  Division: Science & Math
Description: This course is a six-day field study of the Precambrian geology of the western Upper Peninsula of Michigan. The class will focus on rock and mineral identification, economic geology, and the geologic history of Michigan's Upper Peninsula. The relationships of ancient bedrock layers to recent surficial geologic processes and their associated landforms will also be explored. Group 1 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: Completion of any science course with laboratory, instructor permission required  Co-Requisites: None  Recommended Prerequisites: ENG 111, MTH 23

FRN – World Language – French

Course: FRN 101, Elementary French I  Division: Communications
Description: FRN 101 represents a comprehensive introduction to the French language for the true beginner. Students will develop the ability to communicate in French in every day practical situations while acquiring some of the necessary skills for reading, writing, listening, and speaking. Cultural topics are integrated in each unit. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: FRN 102, Elementary French II  
**Division:** Communications  
**Description:** FRN 102 is a continuation of FRN 101 and focuses on the expansion of the communication skills of reading, writing, listening, and speaking. Cultural topics are integrated in each unit. Group 2 course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** FRN 101 with 2.0 or higher, placement test or instructor permission  
**Recommended Prerequisites:** None

Course: FRN 201, Intermediate French I  
**Division:** Communications  
**Description:** FRN 201 is designed to further develop language proficiency in reading, writing, listening, and speaking. A deeper exploration of French culture is presented in this course, allowing students to transform themselves into truly active and proficient language users. Group 1 course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group One Course  
**Required Prerequisites:** FRN 102 with 2.0 or higher, placement test or instructor permission  
**Recommended Prerequisites:** None

Course: FRN 202, Intermediate French II  
**Division:** Communications  
**Description:** FRN 202 is a continuation of FRN 201 and focuses on the application of the communication skills of reading, writing, listening, and speaking within cultural contexts. Group 1 course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group One Course  
**Required Prerequisites:** FRN 201 with 2.0 or higher, placement test or instructor permission  
**Recommended Prerequisites:** None

GEO – Geography

Course: GEO 101, Introduction to Geography  
**Division:** Social Science  
**Description:** This course emphasizes both the physical and the cultural aspects of geography. Physical factors such as weather and climate, soil, vegetation and landforms are considered as they determine the natural resources of a region. Various aspects of human culture such as religion, language and economic systems are studied to gain an understanding of the ways in which people have used and misused their resources. Group 1 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** MTH 08, students scoring below ENG 111 on the placement test should plan on additional study time

Course: GEO 105, Physical Geography  
**Division:** Social Science  
**Description:** Physical geography studies selected elements of the physical environment: weather and climate, landforms, soil and vegetation. Particular emphasis is placed upon the nature and distribution of physical features throughout Michigan with respect to humankind. The lab includes field trips and emphasizes the application of physical principles through hands-on study of minerals, rocks, and soils; in conjunction with map and aerial photo interpretation. Group 1 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** GEO 105L  
**Recommended Prerequisites:** MTH 23, students scoring below ENG 111 on the placement test should plan on additional study time

Course: GEO 105L, Physical Geography Lab  
**Division:** Social Science  
**Description:** The lab emphasizes the application of selected physical elements through means of field work, map and aerial photo interpretation. Group 1 lab course.  
**Credit Hours:** 1  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** GEO 105  
**Recommended Prerequisites:** None

Course: GEO 108, Geography of U S & Canada  
**Division:** Social Science  
**Description:** The diverse regions of Anglo-America will be investigated in this course. We will consider the relationship between the natural environment, the cultural background, economic conditions, and local problems of the U.S. and Canada. Group 1 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Students scoring below ENG 111 on the placement test should plan on additional study time.
**Course:** GEO 109, World Regional Geography  **Division:** Social Science

**Description:** This course is a study of world regions. For each region we will consider the relationship between the natural environment, cultural background, economic conditions, and local problems that relate to world issues. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group One Course

**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

**Course:** GEO 115, Introduction to GIS  **Division:** Social Science

**Description:** This course explores the fundamentals of Geographic Information Systems (GIS) for map reading, interpretation and analysis, in conjunction with the principles of cartography. Computer and Internet technologies are utilized for the generation, manipulation, storage and retrieval of maps and associated geographic attributes. Topics covered include: basic GIS concepts, display of data and attributes, queries, metadata, tabular relationships, data editing, projections and datums, and basic cartography. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 4  **Group Attribute:** Group One Course

**Required Prerequisites:** MTH 23  **Co-Requisites:** None  **Recommended Prerequisites:** Intermediate computer skills (Windows) and Internet experience required.

**HAH – Allied Health**

**Course:** HAH 100C, Informatics Essentials  **Division:** Health Occupations

**Description:** This course will introduce students to informatics in health care and, in particular, nursing. Students will enhance their ability to use modern informatics such as computer and Internet resources as well as Electronic Medical Record (EMR) software, in the health care environment. This course will be offered in a hybrid online and face-to-face format. Group 2 course.

**Credit Hours:** 1  **Contact (Billing) Hours:** 1  **Group Attribute:** Group Two Course

**Required Prerequisites:** None  **Co-Requisites:** HNR 101  **Recommended Prerequisites:** HNR 102, may be taken concurrently

**Course:** HAH 101, Medical Terminology  **Division:** Health Occupations

**Description:** This course is designed to help the student learn the basic construction of medical words through the use of medical prefixes, suffixes, and combining root words. This foundation will facilitate the understanding of new medical vocabulary encountered in other course work or work situations. Group 2 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group Two Course

**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

**Course:** HAH 120, Infection Control  **Division:** Health Occupations

**Description:** This course details the structure of infectious organisms and mechanisms of disease transmission, including host defenses against disease and specific diseases of concern to dental and medical personnel. In addition, the course provides an overview of MIOSHA (Michigan Occupational Safety and Health Act) regulations and occupational safety measures as they relate to the dental and medical fields. Group 2 course.

**Credit Hours:** 2  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course

**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

**Course:** HAH 200, Emergency Assess. & Intervention  **Division:** Health Occupations

**Description:** A comprehensive study of the concepts and practices of first aid techniques. The course provides training for emergency care through assessment, critical thinking, implementation, documentation, and evaluation. It also addresses situations when injury or sudden illness becomes a threat to life, or problems develop that endanger physical or psychological well-being. Certification for CPR for the Professional Rescuer, HAZMAT, and Medical First Responder may be earned in cooperation with state and/or national agencies. Must be able to meet patient lifting and equipment requirements. Required for MCOLES Police Academy. Signature required to register. Group 2 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 4  **Group Attribute:** Group Two Course

**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None
HDA – Dental Assistant

Course: HDA 101, Introduction to Dentistry  Division: Health Occupations
Description: Students are introduced to the role of the dental assistant and the dental team and opportunities for employment. Students will be informed of the requirements for certification and registration and the various organizations and associations within dentistry and dental assisting. Other areas studied will include dental specialties, dental terminology, applied psychology in the dental office, office preparedness to manage medical and dental emergencies, instrument and equipment identification and charting. The student will have an opportunity to view a dental office to see the set up and to observe the roles of each person on the dental team. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: HDA 112, Dental Materials  Division: Health Occupations
Description: Students learn the preparation, manipulation, and use of dental materials commonly found in the dental office. There will be discussion regarding the equipment needed, mixing techniques, and proper usage of waxes, restorative materials, impression materials, gypsum products, cements, metals and therapeutic materials. Preparation of each material will be demonstrated. Group 2 course. Corequisite(s): HDA 113
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: HDA 113  Recommended Prerequisites: HAH 120, HDA 120

Course: HDA 113, Dental Materials Lab  Division: Health Occupations
Description: This course familiarizes the student with the handling of dental materials commonly used in the dental office. Opportunities are provided in the laboratory to develop skills in mixing techniques, impression taking, construction of study models, bleach and acrylic trays, and cleaning and polishing appliances. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: HDA 112  Recommended Prerequisites: HAH 120, HDA 120

Course: HDA 120, Dental Anatomy  Division: Health Occupations
Description: The student will learn the anatomy and physiology of the oral cavity, teeth and head. Students will learn the histology of the teeth and surrounding structures, the bones of the skull, the nerves and blood supply of the head and neck, the muscles of mastication, and the names and functions of the teeth and oral structures. This class will also provide detailed information on the anatomy of the individual teeth. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: HDA 140, Oral Pathology/Pharmacology  Division: Health Occupations
Description: This course will familiarize the student with disease processes related to the oral cavity and to enable the student to identify these diseases. The student will become familiar with various drugs and their uses in dentistry, prescription writing and documentation, the sources of drugs, routes of administration, and the conditions that modify the reactions of drugs. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: HDA 120

Course: HDA 150, Dental Office Management  Division: Health Occupations
Description: Students are acquainted with the procedures necessary for efficient dental office management. Topics include appointment book control, accounts receivable and payable, dental record keeping, third party payment, patient recall, inventory control, telephone techniques, and use of computer hardware and software unique to the dental office. This course is offered in a self-paced format. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: HDA 160, Dental Emergencies  Division: Health Occupations
Description: This course acquaints the student with the types of emergencies that may arise in the dental office. The students will learn the procedures to follow when medical and dental emergencies occur, the importance and significance of obtaining accurate and complete patient histories, the proper emergency equipment necessary in a dental office to manage these emergencies and the maintenance of that equipment, the taking and recording of vital signs. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: HDA 170, Preventive Dentistry  Division: Health Occupations
Description: This course deals with educating dental patients in proper oral hygiene and nutrition. The topics of discussion will include vitamins, minerals, fats, carbohydrates, proteins, food groups, fluoride treatments, oral examinations, pit and fissure sealants, public health dentistry, and oral hygiene instructions. Student demonstration and participation is emphasized. A dietary analysis will be learned and demonstrated by students. Two community presentations will be designed and presented by each student. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: HDA 240, Chairside Procedures  Division: Health Occupations
Description: This course provides the foundation for dental assistant clinical procedures performed in both general and specialty dental offices. Topics include theory and application of four-handed dentistry; application of infection control procedures; an overview of procedures and techniques unique to dental specialties; and background information and technical skills performed by the Registered Dental Assistant. In addition, local dental specialists serve as guest speakers. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: HDA 241  Recommended Prerequisites: HAH 120, HDA 101, HDA 120, HDA 160, HDA 242, HDA 243

Course: HDA 241, Chairside Procedures Lab  Division: Health Occupations
Description: This is the clinical component of Chairside Procedures. Students learn and practice operative and specialty chairside techniques in a fully-equipped dental clinic. Students assist our staff dentist during simulated dental procedures. Expanded duties for dental assistants are also introduced in this course. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: HDA 240  Recommended Prerequisites: None

Course: HDA 242, Dental Radiography  Division: Health Occupations
Description: The fundamentals of radiology as applied to dentistry will be presented. Special consideration will be given to radiation physics, hazards, biological effects, protection and quality control methods. Basic interpretation and radiographic anatomy will also be included. While extraoral techniques are discussed, emphasis will be given to the proper techniques for exposing, processing, and mounting traditional and digital intraoral radiographs of diagnostic quality. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: HDA 243  Recommended Prerequisites: HAH 120, HDA 120, HDA 160, all may be taken concurrently

Course: HDA 243, Dental Radiography Lab  Division: Health Occupations
Description: Clinical component of Dental Radiography. Students will be introduced to a variety of radiography techniques and will learn how to expose, process and mount radiographs of diagnostic quality. Requirements include multiple sets on dental manikins and four FMX sets on dental patients utilizing digital and traditional techniques. Group 2 course.
Credit Hours: 1.5  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: HDA 242  Recommended Prerequisites: None

Course: HDA 282, CDA/RDA Written Exam Prep  Division: Health Occupations
Description: The purpose of this course is to prepare students and working dental assistants for the CDA and RDA written exams. Included are review sessions covering General Chairside, Infection Control, and Radiography for both exams and additional specific topics that relate directly to Michigan’s expanded functions for dental assistants. Group 2 course. Co- and or prerequisites: HDA 112, HDA 113, HDA 140, HDA 170, HDA 240, HDA 241
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: HAH 120, HDA 101, HDA 112, HDA 113, HDA 120, HDA 140, HDA 150, HDA 160, HDA 170, HDA 240, HDA 241, HDA 242, HDA 243, all may be taken concurrently

Course: HDA 286, RDA Clinical Exam Prep  Division: Health Occupations
Description: This course will provide dental assisting students with study/application sessions for the clinical portion of the state licensure exam. Expanded functions of special interest are dental amalgams, temporary crowns, and dental dams. Must be a current dental assisting student or a graduate of a post-secondary dental assisting program approved by the State Board of Dentistry. Group 2 course. Co- and/or pre-requisites: HDA 112, HDA 113, HDA 140, HDA 170, HDA 240, HDA 241.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: HDA 282  Co-Requisites: None  Recommended Prerequisites: None
Course: HDA 290, Dental Assistant Internship  
Division: Health Occupations

Description: Students are assigned to dental offices in the community. 300 hours of hands-on experience includes chairside assisting in general offices, office management, laboratory techniques and expanded functions. A minimum of 200 hours must be completed in a general practice and the additional 100 hours can be in a specialty practice. Each student must also observe for four hours in each of the following: endodontics, oral surgery, orthodontics and periodontics. This course includes 6 hours of internship meetings with the instructor and classmates. During the internship experience, students must show progression from "O" (observed) to "W" (with assistance) to "A" assisted alone) on their journal entries Group 2 course.

Credit Hours: 5  
Contact (Billing) Hours: 5  
Group Attribute: Group Two Course  
Required Prerequisites: HDA 240, HDA 241  
Co-Requisites: HDA 286  
Recommended Prerequisites: None

HF – Health and Fitness

Course: HF 101, Fitness Circuit I  
Division: Physical Education

Description: Introduction to beginning aerobic conditioning through a fitness circuit designed for varying fitness levels. Instruction includes individual fitness evaluation, aerobic fitness, strength training, flexibility, and endurance. Course meets in the NMC Health and Fitness Center using strength training equipment, exercise bicycles, and other aerobic equipment. Two hours per week. Offered summers only. Group 2 course.

Credit Hours: 5  
Contact (Billing) Hours: 1  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: HF 102, Fitness Circuit II  
Division: Physical Education

Description: Continuing beginning aerobic conditioning through a fitness circuit designed for varying fitness levels. Instruction includes individual fitness evaluation, aerobic fitness, strength training, flexibility, and endurance. Course meets in the NMC Health and Fitness Center using strength training equipment, exercise bicycles, and other aerobic equipment. Two hours per week. Offered summers only. Group 2 course.

Credit Hours: 5  
Contact (Billing) Hours: 1  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: HF 105, Personal Trainer Certification  
Division: Physical Education

Description: This course is designed to provide theoretical knowledge and practical skills in preparation for a national certification exam in personal training. Topics include guidelines for instructing safe, effective, and purposeful exercise, essentials of the client-trainer relationship, conducting health and fitness assessments, and designing and implementing appropriate exercise programming. Group 2 course.

Credit Hours: 3  
Contact (Billing) Hours: 4  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: HF 111

Course: HF 111, Fitness Circuit I  
Division: Physical Education

Description: Introduction to aerobic conditioning through a fitness circuit designed for varying fitness levels. Instruction includes individual fitness evaluation, strength training, flexibility, and endurance with an emphasis on aerobic conditioning. Course meets in the NMC Health and Fitness Center using strength training equipment, exercise bicycles, and other aerobic equipment. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: HF 112, Fitness Circuit II  
Division: Physical Education

Description: Continuation of aerobic conditioning through a fitness circuit designed for varying fitness levels. Instruction emphasizes individual strength training and flexibility. Course meets in the NMC Health and Fitness Center using strength training equipment, exercise bicycles, and other aerobic equipment. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: HF 113, Fitness Circuit III  
Division: Physical Education

Description: Continuation of aerobic conditioning through a fitness circuit designed for varying fitness levels. Instruction emphasizes individual aerobic fitness options and the reduction of stress. Course meets in the NMC Health and Fitness Center utilizing strength training equipment, exercise bicycles, and other aerobic equipment. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: HF 112
Course: HF 114, Fitness Circuit IV  Division: Physical Education  
**Description:** Continuation of aerobic conditioning through a fitness circuit designed for varying fitness levels. Instruction emphasizes individual fitness evaluation/workout, weight control, and nutrition. Course meets in NMC Health and Fitness Center using strength training equipment, exercise bicycles, and other aerobic equipment. Group 2 course.

**Credit Hours:** 1  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course  
**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

Course: HF 116, Yoga I  Division: Physical Education  
**Description:** Yoga is postural work emphasizing precise and careful body alignment and maximum spinal extension. Yoga works through the concreteness of the body to teach balance and integration. It is an effective way to stretch and strengthen the body. Using movement and breath, yoga brings a therapeutic calm to the body and mind, releasing stress and bringing relaxation. Group 2 course.

**Credit Hours:** 1  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course  
**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

Course: HF 118, Yoga II  Division: Physical Education  
**Description:** Yoga techniques focus on understanding and controlling the body, the breath, and the mind through exercises (asans), breathing techniques (pranayamas), and meditation training (quieting the mind and body). Yoga poses are designed to develop strength and give maximum flexibility to the muscular, skeletal, and nervous systems with special emphasis on building a strong, supple spine. Benefits include improved circulation, hormonal balance, poise, and a more stable emotional nature. Learning proper breathing will help you cope with stress and increase your energy level. Wear loose, comfortable, layered clothing and plan to work barefooted. Bring two blankets, a mat, and a bath towel. Group 2 course. Prerequisite(s): HF 116 or instructor permission.

**Credit Hours:** 1  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course  
**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

Course: HF 118A, Bikram Yoga I  Division: Physical Education  
**Description:** This is the original hot yoga, 105 degrees, pure, powerful, authentic, unchanged, taught exactly as Hatha Yoga Master Bikram Choudhury intends it to be taught. 26 poses, 2 breathing exercises, 90 minutes, plus heat. Prerequisite: Good heart health and not pregnant. Group 2 course.

**Credit Hours:** 1  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course  
**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

Course: HF 118B, Bikram Yoga II  Division: Physical Education  
**Description:** A continuation of the original Hot Yoga, 105 degrees, pure, powerful, authentic, unchanged, taught exactly as Hatha Yoga Master Bikram Choudhury intends it to be taught. Twenty-six poses, two breathing exercises, 90 minutes, plus heat. Students must be in good heart health and not pregnant. Group 2 course.

**Credit Hours:** 1  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course  
**Required Prerequisites:** HF 118A  **Co-Requisites:** None  **Recommended Prerequisites:** None

Course: HF 124, Aerobic Dance  Division: Physical Education  
**Description:** Through choreographed dance movements and contemporary music, cardiovascular endurance, flexibility, strength and coordination is promoted. Offered summers only. Group 2 course.

**Credit Hours:** .5  **Contact (Billing) Hours:** 1  **Group Attribute:** Group Two Course  
**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

Course: HF 126, Lap Swim I  Division: Physical Education  
**Description:** Use of basic strokes for fitness is reviewed. Emphasis is on aerobic and muscular endurance through swimming a variety of laps. Group 2 course. Prerequisite(s): Ability to swim repeated laps across a pool.

**Credit Hours:** 1  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course  
**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None

Course: HF 127, Lap Swim II  Division: Physical Education  
**Description:** A continuation of the Lap Swim program. Emphasis is on increasing aerobic and muscular endurance through swimming a variety of laps. Group 2 course. Prerequisite(s): HF 126

**Credit Hours:** 1  **Contact (Billing) Hours:** 2  **Group Attribute:** Group Two Course  
**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** None
Course: HF 133, Pilates I  Division: Physical Education
Description: The Pilates method of body conditioning is a unique system of stretching and strengthening exercises used to develop long, lean bodies. This program uses floor exercises to strengthen and tone muscles, flatten abdominals, improve posture, flexibility, balance, agility, and coordination. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: HF 143, Pilates II  Division: Physical Education
Description: Building on the fundamentals and exercises of the prerequisite class, Pilates, the intermediate and the advanced series of mat exercises will be added. The body will be challenged with moves that call for more strength, coordination, balance, flexibility, and control. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

HNR – Nursing

Course: HNR 100, Introduction to Nursing  Division: Health Occupations
Description: Presents the history of nursing & nursing education. Introduces professional nursing values and the attitudes and behaviors desired in nurses. Discusses nursing roles, career opportunities, and types of health care delivery settings. Introduces the student to legal and ethical issues related to the role and scope of practice of the licensed practical nurse and the registered nurse. Introduces basic concepts related to professionalism, patient-centered care, health, spirituality, culture, holism, and the impact of illness on the individual and his/her significant others. Covers beginning professional communication skills, collaboration, teamwork, and basic teaching/learning principles.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course  
Required Prerequisites: ENG 111, MTH 111  Co-Requisites: None  Recommended Prerequisites: None

Course: HNR 101, Fundamentals of Nursing-Lecturer  Division: Health Occupations
Description: The students learn the foundation for professional nursing practice. Emphasis is placed on the principles and skills needed to apply the clinical judgment required for safe patient centered care. Communication is emphasized as an essential aspect of the professional role. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course  
Required Prerequisites: BIO 228 w/grade of 2.5 or higher and HNR 100 - both may be taken concurrently  Co-Requisites: HNR 102  Recommended Prerequisites: None

Course: HNR 102, Fund of Nursing-Clinical  Division: Health Occupations
Description: Through laboratory and/or clinical experience students learn about the professional identity of the nurse while acquiring and applying basic nursing knowledge, judgment, and skills in order to provide safe patient centered care. The student also learns communication and collaboration skills. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 12  Group Attribute: Group Two Course  
Required Prerequisites: BIO 228 w/grade of 2.5 or higher, may be taken concurrently  Co-Requisites: HAH 100C, HNR 101  Recommended Prerequisites: None

Course: HNR 108, Pharmacology  Division: Health Occupations
Description: Students learn an overview of pharmacology with emphasis on clinical applications within the context of the nursing process. The course is organized by medication classification. It explores indications, modes of action, side effects, contraindications and interactions for the safe administration of selected drugs. Specific nursing judgment and collaborative responsibilities to drug administration are emphasized. Legal statutes and standards regulating drug administration within the scope of nursing professional identity are presented. Individualized patient variables across the lifespan will also be a focus of study. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course  
Required Prerequisites: BIO 228 w/grade of 2.5 or higher, may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None
**Course:** HNR 125, Lifespan Nursing Lecture  **Division:** Health Occupations

**Description:** Presentation of nursing management of health care issues related to uncomplicated pregnancy, birth, and neonatal period. Introduction of nursing management of common health alterations found in both chronically and acutely ill clients across the lifespan. Emphasis will be made on utilizing evidence-based practice to identify appropriate nursing interventions to achieve the desired outcome for the client based on their developmental level across the lifespan. Group 2 course.

**Credit Hours:** 5  **Contact (Billing) Hours:** 5  **Group Attribute:** Group Two Course

**Required Prerequisites:** BIO 240 and HNR 108, both may be taken concurrently; HAH 100C, HNR 100, HNR 101, HNR 102  **Co-Requisites:** HNR 126  **Recommended Prerequisites:** None

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**Course:** HNR 126, Lifespan Nursing-Clinical  **Division:** Health Occupations

**Description:** Clinical experiences providing opportunities to apply principles studied in HNR 125. Clinical learning environments will include the opportunity to apply medical-surgical, pediatric, and obstetric nursing interventions in a variety of settings, including acute care and simulation experiences. Group 2 course.

**Credit Hours:** 5  **Contact (Billing) Hours:** 15  **Group Attribute:** Group Two Course

**Required Prerequisites:** BIO 240 and HNR 108, both may be taken concurrently; HAH 100C, HNR 100, HNR 101, HNR 102  **Co-Requisites:** HNR 125  **Recommended Prerequisites:** None

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**Course:** HNR 145, Practical Nursing Roles & Issues  **Division:** Health Occupations

**Description:** Reviews ethical/legal responsibilities of the LPN. Presents issues and trends related to LPN practice, nursing organizations, continuing education; and licensure. Discusses occupational opportunities and provides information on employment search, job-seeking skills and transition issues. Group 2 course.

**Credit Hours:** 1  **Contact (Billing) Hours:** 1  **Group Attribute:** Group Two Course

**Required Prerequisites:** HNR 125, HNR 126-both can be taken concurrently  **Co-Requisites:** None  **Recommended Prerequisites:** None

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**Course:** HNR 241, Adv Maternal Child Nursing-Lecture  **Division:** Health Occupations

**Description:** This course will expose the student to the complex problems facing families coping with complications during the child-bearing/child-rearing process. Characteristics of the at-risk family will be explored. These concepts will be applied to a review of complications occurring during the prenatal, intrapartal, and postpartal periods. The course will then deal with complex health problems during childhood and will include a discussion on perinatal loss and childhood death. A major theme throughout the course will be the use of the nursing process to promote optimal functioning for at-risk families. Community resources will be explored. Previous content on growth and development and cultural considerations will be reviewed briefly and concepts applied through class discussions and case scenarios. Group 2 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group Two Course

**Required Prerequisites:** HNR 247, HNR 248, both may be taken concurrently  **Co-Requisites:** None  **Recommended Prerequisites:** None

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**Course:** HNR 242, Adv Maternal Child Nursing-Clinical  **Division:** Health Occupations

**Description:** This course provides for the clinical application of the principles presented in the co-requisite: HNR 241. Students will spend clinical time on a maternity inpatient unit. A clinical instructor will guide and support the student through observational experiences in labor and delivery and all students will have the opportunity to do postpartum and newborn assessments and care. Students will also spend clinical time in a precepted pediatric clinical caring for pediatric patients. Clinical time will also be spent doing an assessment on a family, assessing growth and development and community resources. Students will also be involved in clinical simulations and case studies. Students will participate in the above experiences by observing and/or directly providing care to at-risk families coping with childbirth and/or childrearing stressors/issues. Risk factors for these families may include developmental and psychosocial factors as well as physical alterations or complications. Group 2 course.

**Credit Hours:** 2  **Contact (Billing) Hours:** 6  **Group Attribute:** Group Two Course

**Required Prerequisites:** HNR 247, HNR 248, both may be taken concurrently  **Co-Requisites:** HNR 241  **Recommended Prerequisites:** None
Course: HNR 247, Complex Patient Mgmt I-Lecture  
**Description:** Presentation of nursing interventions and management concepts required for adult patients with complex medical and/or surgical disorders. Emphasizes advanced assessment, analysis, nursing judgment, and nursing accountability. The focus is on adult patients with multiple complex requirements. Geriatric considerations are presented and integrated throughout. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** BIO 240, HAH 100C, HNR 125, HNR 126  
**Co-Requisites:** HNR 248  
**Recommended Prerequisites:** Admission to the Nursing program, GPA of 2.0 on all prerequisite nursing courses

Course: HNR 248, Complex Patient Mgt I-Clinical  
**Description:** Clinical experience providing opportunities to apply principles presented in HNR 247. Emphasis is upon refinement of organization, decision-making, critical thinking, and priority-setting skills in the care of multiple clients with complex medical/surgical disorders. Group 2 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 12  
**Group Attribute:** Group Two Course

**Required Prerequisites:** BIO 240, HAH 100C, HNR 125, HNR 126, or admission to the Nursing program and successful completion of prerequisite nursing courses with 2.0 or better  
**Co-Requisites:** HNR 247  
**Recommended Prerequisites:** Admission to the Nursing program, GPA of 2.0 on all prerequisite nursing courses

Course: HNR 251, Mental Health Nursing - Lec  
**Description:** This course is designed to enable the student to better understand behavior exhibited by persons with mental disorders. Classifications, causes, and symptoms of mental diseases are presented and treatments such as individual, group, and activity therapies are explored. Emphasis is placed on the ways by which the nurse determines, develops, implements, and evaluates a therapeutic environment for the client. The implementing of theories of human behavior is the scientific aspect of mental health-psychiatric nursing; the purposeful use of the self in the performance of care is the artful aspect. The goal is preventative and corrective impact upon mental illness and the restoration of optimal mental health for individuals. Group 2 course.

**Credit Hours:** 2  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course

**Required Prerequisites:** HNR 241, HNR 242  
**Co-Requisites:** HNR 252  
**Recommended Prerequisites:** None

Course: HNR 252, Mental Health Nursing-Clinical  
**Description:** Clinical experience providing opportunities to apply principles presented in HNR251. A variety of clinical settings addressing mental health issues in acute care, long-term care, and in community agencies are utilized. Emphasis is placed upon the exercise of critical thinking in addressing mental health issues and concerns. Additionally, students identify and analyze community resources of importance to persons with mental health issues. Students participate in care in the clinical area approximately 12 hours per week for 3.5 weeks during the semester. Group 2 course.

**Credit Hours:** 1  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** HNR 241, HNR 242  
**Co-Requisites:** HNR 251  
**Recommended Prerequisites:** None

Course: HNR 261, Complex Patient Mgmt II-Lec  
**Description:** This course builds upon the content of HNR247 with the presentation of nursing management of adult patients with complex endocrine, hepatic, and autoimmune disorders. Additionally, the course introduces principles of leadership and management as these relate to the delivery of nursing care to a group of patients. The principles of delegation, communication, and priority setting are reviewed. The course discusses a variety of nursing management challenges related to team building, managing change, conflict resolution, power and authority, politics and political action, current economic aspects of health care, legal/ethical issues, and emergency preparedness. Career opportunities, job-seeking skills, NCLEX-RN preparation, and issues related to role transition are discussed in reference to the graduates' move into the work force. The quality improvement process and evidence-based practice are considered as students research a current issue or trend in nursing management. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** HNR 251, HNR 252, both can be taken concurrently  
**Co-Requisites:** HNR 262  
**Recommended Prerequisites:** None
**Course:** HNR 262, Complex Patient Mgmt II Clinic  
**Division:** Health Occupations

**Description:** Clinical experience providing opportunities to apply principles presented in HNR 261. A variety of clinical units in acute care and extended care settings are utilized. Emphasis is placed upon organizational skills, including time management, and the exercise of critical judgment in managing the care for a normal caseload of clients. The process of critical thinking is the nucleus necessary to achieve the course objectives. Students perform care in the clinical area 24 hours per week for 7.5 weeks during the semester. The course is designed to promote a successful role transition from student to entry-level professional nurse. Group 2 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 12  
**Group Attribute:** Group Two Course

**Required Prerequisites:** HNR 251, HNR 252, both can be taken concurrently  
**Recommended Prerequisites:** HNR 261

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**HPD – Professional Development**

**Course:** HPD 110, BLS for Health Care Providers  
**Division:** Health Occupations

**Description:** Provides basic life support training and certification for nursing students interested in becoming health care providers to provide them with life support skills needed for clinical practice. Admission to nursing program or instructor permission. Group 2 course.

**Credit Hours:** .2  
**Contact (Billing) Hours:** .2  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

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**HST – History**

**Course:** HST 101, Western Civilization to 1500AD  
**Division:** Humanities

**Description:** This is the first course in a year-long study of western civilizations from the birth of civilization to the Age of Nation States in the 19th Century. The main instructional goal is to have students demonstrate an understanding of the diverse societies and culture of the western world. It's important that students recognize that western civilization includes many diverse cultures and has interacted with many other diverse cultures throughout its development. In addition, students will analyze the distinctive characteristics of western civilizations, identify the achievements and limitations of western civilizations, and develop an awareness of how contemporary problems were caused by past forces. As students achieve these goals, they will develop skills in communication and critical thinking. This course covers the period from the birth of civilization to the early Middle Ages. Group 1 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group One Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111

**Course:** HST 102, Western Civilization from 1500  
**Division:** Humanities

**Description:** This is the second course in a year-long study of western civilizations from the birth of civilization to the Age of Nation States in the 19th Century. The main instructional goal is to have students demonstrate an understanding of the diverse societies and culture of the western world. It's important that students recognize that western civilization includes many diverse cultures and has interacted with many other diverse cultures throughout its development. In addition, students will analyze the distinctive characteristics of western civilizations, identify the achievements and limitations of western civilizations, and develop an awareness of how contemporary problems were caused by past forces. As students achieve these goals, they will develop skills in communication and critical thinking. This course covers the period from the Late Middle Ages to the Age of Nation States in the 19th Century. Group 1 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group One Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111

**Course:** HST 111, U S History to 1865  
**Division:** Humanities

**Description:** This is the first course in a year-long study of U.S. History from Native American origins to the modern world. A main instructional goal is to have students demonstrate an understanding of how diverse societies and cultures have contributed to the development of the United States. In addition, students will analyze the distinctive characteristics of the development of the United States, identify the achievements and limitations of these developments, and develop an awareness of how contemporary problems were caused by past forces. Students will learn how American society developed from Native American origins through Reconstruction, and how society has impacted both individuals and groups in America. As students achieve this goal, they will develop skills in communications and critical thinking. Group 1 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group One Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111
Course: HST 112, U S History Since 1865  Division: Humanities
Description: This is the second course in a year-long study of U.S. History from Native American origins to the modern world. A main instructional goal is to have students demonstrate an understanding of how diverse societies and cultures have contributed to the development of the United States. In addition, students will analyze the distinctive characteristics of the development of the US, identify the achievements and limitations of these developments, and develop an awareness of how contemporary problems were caused by past forces. As students achieve these goals, they will develop skills in communication and critical thinking. Students will learn how American society developed from Reconstruction to the post-Vietnam era, and how society has impacted both individuals and groups in America. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: HST 211, Native American History  Division: Humanities
Description: A history of the Native American experience from the pre-Columbian period to the post World War II era. Major emphasis is placed upon the social, political, and economic role of the Native American community in American society and its unique role as a part of that society. Students will also demonstrate an awareness of how contemporary problems were caused by past forces. Students will develop skills in analysis, critical thinking, historical reasoning and writing. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: HST 212, African-American History  Division: Humanities
Description: This course is a history of the African-American experience from African origins to the Modern era in America. Major emphasis is placed upon the social, political, and economic role of the African-American community in American society and its unique role as a part of that society. Students will also demonstrate an awareness of how contemporary problems were caused by past forces. As students achieve this goal, they will develop skills in analysis, critical thinking, historical reasoning, and writing. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: HST 213, American Women's History  Division: Humanities
Description: A history of American women's experience from Native American origins to the Modern Era. Major emphasis is placed upon the social, political, and economic role American women in American society and their unique role as a part of that society. Students will also demonstrate an awareness of how contemporary problems were caused by past forces. As students achieve this goal, they will develop skill in analysis, critical thinking, historical reasoning, and writing. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: HST 225, American Civil War  Division: Humanities
Description: This course is a study of the American Civil War. The instructional goal is to have students demonstrate through discussions and essays the causes of the Civil War in antebellum America, how the war was waged, why the North won and the South lost the war, how the war affected American society, and how the war led to Reconstruction. Students will demonstrate an awareness of how contemporary problems were caused by past forces. As students achieve this goal they will develop skills in communications and critical thinking. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: HST 228, The Vietnam War  Division: Humanities
Description: This course is a study of the history of the Vietnam War. The instructional goal of this course is to have students demonstrate through discussions and essays how America became involved in Vietnam, how the war was waged, the war's effect on American society, and how the war affected Vietnam. Students will also demonstrate an awareness of how Vietnamese culture affected the war and how Vietnam has affected America's contemporary society. As students achieve this goal, they will develop skills in analysis, critical thinking, historical reasoning, and writing. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111
Course: HST 230, A History of Michigan  
**Division:** Humanities  
**Description:** The instructional goal of this course is to have students demonstrate through discussion and essays the distinctive characteristics of Michigan history, the common characteristics of Michigan history as compared to other states, the identification of achievements and limitations of Native American societies within Michigan, and an awareness of how contemporary problems were caused by past forces. This course covers the period from the "earliest beginnings" to the "recent past." As students achieve this goal, they will develop skills in analysis, critical thinking, historical reasoning, and writing. Group 1 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111

Course: HST 235, 20th Century Europe  
**Division:** Humanities  
**Description:** This course is a study of the history of Europe in the 20th Century with emphasis on Germany, England, France, and Russia. The instructional goal of this course is to have students demonstrate through discussions and essays the distinctive characteristics of European civilizations, the common characteristics of European civilizations, the identification of achievements and limitations of European civilizations, and how Europe has affected America and America affected Europe. Students will demonstrate an awareness of how contemporary problems were caused by past forces. As students achieve this goal, they will develop skills in analysis, critical thinking, historical reasoning, and writing. Group 1 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111

**HUM – Humanities**

Course: HUM 101, Introduction to Humanities  
**Division:** Humanities  
**Description:** An interdisciplinary study of Western Culture focusing on the interrelationships of art, literature, and philosophy as they reveal the major ideas and values of Classical Greek, Roman, Medieval, and Renaissance civilizations. Group 1 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111

Course: HUM 102, Introduction to Humanities  
**Division:** Humanities  
**Description:** An interdisciplinary study of Western Civilization focusing on the interrelationships of art, literature, and philosophy as they reveal the major ideas and values of the Reformation, Baroque, Neo-Classic, Romantic, Realistic, and Modern periods. Group 1 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111

Course: HUM 116, World Cultures  
**Division:** Humanities  
**Description:** The purpose of this course is to introduce major trends of non-Western art and culture. This course explores the arts and culture of Asia, Africa, Oceania and the Americas utilizing an interdisciplinary and thematic approach focusing on the painting, sculpture, architecture, textiles, body art, masks, social and political issues, cultural and religious rituals, and customs and traditions of each region. Group 1 course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group One Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111

**HVA – Heating, Ventilation, Air Conditioning**

Course: HVA 101, Introduction to HVAC/R  
**Division:** Construction Technology  
**Description:** This course covers safety concerns associated with the HVAC field, identification and use of trade tools and basic blueprint reading. Students are introduced to different types of pipe and tubing used for equipment and will learn threading and soldering techniques. A strong emphasis is placed on electrical theory and application as well as learning how to read electrical diagrams. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** Placement into ENG 111 and MTH 111, both may be taken concurrently
Course: HVA 106, Fundamentals of Heating  
**Division:** Construction Technology  
**Description:** This course focuses on the variety of heating systems in the HVAC career field. Students are introduced to the principles of combustion and the importance of combustion analysis. Gas furnaces, heating controls, oil fired equipment, humidification and electric heating systems are also explored. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** HVA 101  
**Recommended Prerequisites:** Placement in ENG 111 and MTH 111

Course: HVA 122, Refrigeration Fundamentals  
**Division:** Construction Technology  
**Description:** This course introduces students to the relationship between matter and energy as it relates to refrigeration process and discusses the Laws of Thermodynamics and effects of pressures and vacuums on a system. A thorough coverage of the basic refrigeration cycle is discussed along with types of refrigerants and system components they will encounter. Students will also learn basic servicing and testing techniques on refrigeration systems. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** HVA 101  
**Recommended Prerequisites:** Placement in ENG 111 and MTH 111

Course: HVA 126, Residential and Commercial A/C  
**Division:** Construction Technology  
**Description:** This course focuses on different types of air conditioning systems, ventilation and de-humidification equipment used in residential and light commercial applications. Students will learn about air source and geothermal heat pumps, mechanical and electrical troubleshooting techniques for air conditioning systems and explore indoor air quality and planned maintenance issues for all types of equipment. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** HVA 106, HVA 122  
**Recommended Prerequisites:** Placement in ENG 111 and MTH 111

Course: HVA 132, Commercial A/C & Refrigeration  
**Division:** Construction Technology  
**Description:** This course focuses on larger commercial systems encountered in the HVAC field for air conditioning and refrigeration applications. Emphasis is placed on chilled water and hydronic heating systems, boilers, air handling equipment and cooling towers. Students will also learn about larger scale refrigeration systems used in supermarket and cold storage applications, ice machine operation and discussion of control systems used throughout the field. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** HVA 126  
**Recommended Prerequisites:** Placement in ENG 111 and MTH 111

Course: HVA 136, EPA Certification  
**Division:** Construction Technology  
**Description:** This course examines the impact of refrigerants on the environment and focuses on federal regulations regarding the use, recovery and disposal methods. Students are given the opportunity to earn their Type I, Type II or Universal Certification through this course. Upon successful completion of each test, the student will earn levels of certification recognized by the HVAC/R industry nationwide. Group 2 course.  
**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** HVA 132  
**Recommended Prerequisites:** Placement in ENG 111 and MTH 111

LWE – Law Enforcement

Course: LWE 102, Police Operations  
**Division:** Social Science  
**Description:** The student is introduced to educational and training requirements for employment in law enforcement, police community relations, the functions and objectives of a police department and the police response and responsibilities to the community. Student must be registered with LWE coordinator prior to class enrollment. Group 2 course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Recommended Prerequisites:** None

Course: LWE 195, Police Practicum  
**Division:** Social Science  
**Description:** The course will provide Law Enforcement students with the practical experience of observing five various shifts with officers. This should insure that candidates will understand what law enforcement officers actually do. Recording the experiences will also assist the student in report writing. Group 2 course.  
**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Recommended Prerequisites:** None
Course: LWE 210, Cultural Awareness/Diversity  
**Division:** Social Science  
**Description:** This course will explore ethics, cultural diversity, interpersonal skills and the laws as they apply to today's modern policing. Title VII or the 1964 Civil Rights Act, Elliot Larson Civil Rights Act, Americans with Disabilities Act, ethnic intimidation, and sexual harassment will also be addressed. Student must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 2  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 212, Criminal Investigation  
**Division:** Social Science  
**Description:** Students will be introduced to criminal investigation procedures including theory of an investigation, conduct at crime scenes, collection and preservation of physical evidence, methods used in police science laboratory, fingerprints, ballistics, documents, serology, photography, and related forensic sciences. Student must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 214, Firearms  
**Division:** Social Science  
**Description:** This course will assist the students in the development of safety skills and the appropriate use of firearms in completing the Michigan Commission on Law Enforcement Standards basic firearms course. Included will be an orientation to firearms, policies, procedures, and liability of firearms use and hands-on firearms range techniques. Student must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 8  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 215, Defensive Driving  
**Division:** Social Science  
**Description:** Defensive Driving will cover motor vehicle law, its application and jurisdiction and vehicle stops. This course will also include the teaching of driving skills needed by a law officer. Student must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 6  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 216, Traffic Enforcement & Invest  
**Division:** Social Science  
**Description:** Traffic Enforcement and Investigation will include traffic control enforcement, the law and prosecution of operating under the influence of alcohol. Student must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 218, Physical Training/Wellness  
**Division:** Social Science  
**Description:** This course is designed to give the students a complete understanding of wellness/physical fitness. The goal of the class is to develop a mentality that fitness is long term. Includes course lectures on the following topics: Fitness and wellness, benefits and guidelines for exercise, coronary risk factors, stress management, nutrition, weight control, low back care, motivation and behavior change, and various ways to perform fitness tasks. This class also includes workouts, and testing students against Cooper Standards. Student must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 5  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 225, Defensive Tactics  
**Division:** Social Science  
**Description:** Students learn subject control with new mandatory guidelines from MCOLES. Students will understand survival mindset, tactical communication, fear/anger management, and post force incident responsibilities. Student will demonstrate proficiency in 13 defensive tactics outcomes. Student must be registered with LWE coordinator prior to class enrollment and be in excellent physical condition. Group 2 course.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 5  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** Must be approved by MCOLES and registered with the Director of the Police Academy prior to enrollment  
**Co-Requisites:** None  
**Recommended Prerequisites:** None
Course: LWE 226, Michigan Criminal Law  
**Division:** Social Science

**Description:** The study of substantive criminal law as a means of defining and preserving social order. Sources of criminal law; classification of crimes against persons, property and public welfare; principles of criminal liability; elements necessary to establish crime and criminal intent; specific crimes and defenses; and constitutional limitations are examined. Students must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 227, Criminal Procedures  
**Division:** Social Science

**Description:** Criminal Procedures will study the administration of criminal justice, the nature and scope of police power, the concept of exclusion, laws of arrest, search and seizure and interrogation, the acquisition of evidence, and judicial protection of the accused. Must be registered with LWE coordinator prior to class enrollment. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: LWE 228, Speed Measurement/PBT  
**Division:** Social Science

**Description:** This course will teach the legal and practical aspects of radar and PBT (preliminary breath tester) operations. Class discussions will primarily be based on relationship between excessive speed, drinking and highway crashes. The course will also explore departmental policies and procedures concerning radar and PBT use. Students will understand and demonstrate basic accident investigation and related accident evidence collection. Must register with the LWE coordinator prior to course enrollment. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

MDK – Maritime Deck

Course: MDK 100, Survival at Sea  
**Division:** Maritime

**Description:** This course of instruction covers the following: concentrated instruction and training for the U.S. Coast Guard certification as LIFEBOATMAN; including the fundamentals of seamanship, small boat handling with power and sail; construction equipment, and marking of the standard lifeboat; construction, equipment, and operation of inflatable life rafts; abandon ship procedures, man overboard procedures, and survival swimming; the launching and retrieval of lifeboats; sailboat nomenclature and operation. STCW.

**Credit Hours:** 1  
**Contact (Billing) Hours:** 1  
**Group Attribute:** Group Two Course

**Required Prerequisites:** All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation from the curriculum guide needs to be approved by the department head.  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: MDK 104, Rigging & Ship Maintenance Lab  
**Division:** Maritime

**Description:** The purpose of this course is to provide the cadet an opportunity to acquire practical experience in general seamanship: including marlinespike seamanship, line handling; splicing line, splicing wire rope; rigging, block and tackle nomenclature and use; vessel maintenance, the practical application of the procedures and equipment used in vessel upkeep.

**Credit Hours:** 1  
**Contact (Billing) Hours:** 1  
**Group Attribute:** Group Two Course

**Required Prerequisites:** All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation from the curriculum guide needs to be approved by the department head.  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: MDK 106, Watchstanding I  
**Division:** Maritime

**Description:** The purpose of this course is to provide an opportunity for the cadet to acquire practical experience in shiphandling with vessels sufficiently large to duplicate shiphandling problems encountered with much larger vessels. Cadets are exercised in line handling, towing, anchoring techniques, landing techniques, and shipboard safety. Cadets will then advance through the use of simulation to shiphandling exercises dealing with the general principles of vessel control and the problems of handling a vessel in narrow channels. STCW.

**Credit Hours:** 1  
**Contact (Billing) Hours:** 1  
**Group Attribute:** Group Two Course

**Required Prerequisites:** All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation from the curriculum guide needs to be approved by the department head.  
**Co-Requisites:** None  
**Recommended Prerequisites:** None
Course: MDK 112, Rules of the Nautical Road  Division: Maritime
Description: Comprehensive study of the international rules of the road -COLREGS- including their origin, purpose, history, technical provisions, and application. Included is a comparative study of both international and inland rules, their interpretation and practical application as well as a study of case histories and legal interpretations resulting from collisions at sea. STCW.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: None

Course: MDK 121, Navigation I  Division: Maritime
Description: An introduction to principles of piloting and marine navigation. Includes chart projection, the magnetic compass, chart usage, buoyage systems, aids to navigation, fixes and running fixes, and the use of standard tables. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: MDK 122  Recommended
Prerequisites: None

Course: MDK 122, Navigation I Lab  Division: Maritime
Description: This lab is taken concurrently with MDK 121 and concentrates on applying the principles of piloting to plotting on the chart. Chart projection and use will be introduced. Dead reckoning, terrestrial fixes, set and drift, lines of position, and the use of navigational instruments will be covered. STCW.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: MDK 121  Recommended
Prerequisites: None

Course: MDK 149, Damage Control & Safety  Division: Maritime
Description: This course is designed to give the cadet a comprehensive knowledge of shipboard safety with particular emphasis on firefighting and damage control. Subject areas include: personal safety, pollution, U.S. Coast Guard rules and regulations, temporary damage repair, shoring principles and practical shoring problems. STCW.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: None

Course: MDK 200, Ship Business & Labor Relation  Division: Maritime
Description: This course provides instruction in the organization, administrative functions, and management of a merchant vessel as well as the systems of operation of ship’s business. It includes the study of union contracts, grievance procedures and labor management relations.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: None

Course: MDK 206, Watchstanding II  Division: Maritime
Description: The purpose of this course is to begin to develop a cadet’s piloting and watch management skills. The use of the Shiphandling Simulator/Academy Vessels will allow the development of the Bridge Team Concept through piloting exercises.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: None
Course: MDK 210, Sea Project Deck  Division: Maritime
Description: During this course the cadet is on board a Great Lakes commercial vessel, an ocean vessel or the Academy training ship. The cadet follows a prescribed course of study of vessel operations, safety and navigation equipment and techniques. In addition, the cadet spends a minimum of eight hours per day under supervision of licensed officers gaining experience in various duties and responsibilities.
Credit Hours: 6  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: Must complete first academic year with a 2.0 or higher in all required courses; All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None

Course: MDK 221, Lakes Piloting  Division: Maritime
Description: Study of the Great Lakes and principal ports; this includes currents, depths, aids to navigation, prevailing winds and their effects, recommended courses, shoals, reefs, and high traffic areas. Historic analysis will explain current practices.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None

Course: MDK 222, River Piloting  Division: Maritime
Description: An in-depth study of the rivers, channels, and the aids to navigation in these rivers and channels. The focus will be on the rivers that make up the Great Lakes connecting bodies such as the St. Mary's, St. Clair, Detroit Rivers and the Welland Canal.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None

Course: MDK 242, Ship Stability  Division: Maritime
Description: A study of the principles of stability; righting moment and righting arm; calculation of metacentric height; inclining experiment; stability computers and tables; practical stability and trim considerations. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None

Course: MDK 250, Stability for the Engineer  Division: Maritime
Description: Principles, terms, and procedures used in the determination of transverse, longitudinal, and damage stability of ships. Investigation of the physical laws affecting a floating body. Effects of cargo operation, free surface, fuel consumption, and flooding on vessel stability. Scrutiny of case studies involving both partial or total loss of stability.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None

Course: MDK 311, Sea Project Deck  Division: Maritime
Description: This course is a continuation of MDK 210 and is designed to provide the cadet with advanced knowledge and sailing time to meet the licensing requirements prescribed by the U.S. Coast Guard and the criteria established by the Maritime Administration. STCW.
Credit Hours: 6  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: Completion to second academic year with 2.0 or higher in all required courses; All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None
Course: MDK 312, Sea Project Deck  Division: Maritime
Description: This course is a continuation of MDK 311 and is designed to further enhance the cadet's professional knowledge and sailing time to meet licensing requirements of the U.S. Coast Guard and the criteria established by the Maritime Administration. STCW.
Credit Hours: 6 Contact (Billing) Hours: 6 Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None Recommended
Prerequisites: None

Course: MDK 324, Navigation III  Division: Maritime
Description: An introduction to nautical astronomy concerned with the practical application of celestial navigation, the solving of the spherical triangle, star identification, measurement of time and use of instruments. This course will cover plane, mid-latitude, and Mercator sailings and how to apply them to navigational problems through the various time zones. Sunrise, sunset, twilight, moonrise, and moonset calculations for a moving vessel will be covered. STCW.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 330, STCW Elementary First Aid  Division: Maritime
Description: This course meets the mandatory minimum requirements specified under STCW as related to medical first aid and basic safety training for all merchant mariners. This course is part of the STCW certification process. Cadets will learn to take immediate action upon encountering an accident or other medical emergency. STCW.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None Recommended
Prerequisites: None

Course: MDK 331, Electronic Navigation  Division: Maritime
Description: An in-depth study of various electronic navigation systems with emphasis on radar and covering the theory, operation, use and general maintenance of each system. Required course, must be successfully completed before student may receive Radar Observer Certificate. STCW.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: MDK 332 Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 332, Electronic Navigation Lab  Division: Maritime
Description: A practical course to understand the use and operation of a Marine Radar, how to avoid collision situations (Rapid Radar Plotting), use and operation of Automatic Collision Avoidance System, Gyrocompass theory, Loran “C” theory and operation, GPS theory and operation, depth sounder theory and operation. Note: Required course, must be successfully completed before student may receive Radar Observer Certificate. STCW.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: MDK 331 Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 333, Automatic Radar Plotting Aids  Division: Maritime
Description: This course presents the principles and operation of automatic radar plotting aids. It includes the legal aspects of ARPA including IMO and USCG standards, the theory of input and processing characteristics of ARPA, the theory of operation, control functions and adjustments, the acquisition and tracking of contacts, the limitations of and potential errors of ARPA, and special ARPA related features. The cadet will demonstrate the setup and practical use of two actual automatic collision avoidance radars. STCW.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: MDK 331 Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.
Course: MDK 341, Ship Construction  Division: Maritime
Description: A study of the principles of hull construction as applied to all types of vessels. Includes construction nomenclature, criteria of design, methods of construction, materials used in construction, and the forces acting on the hull. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 345, Dry Cargo Stowage  Division: Maritime
Description: Principles and problems of the stowage and carriage of cargo: bulk cargo, container cargo, refrigerated cargo, grain cargo and dangerous cargo; cargo handling operations, both loading and uploading equipment. Cargo stowage plans will be developed and reviewed. Students will critique loads they were involved with during their time aboard ship. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 350, Pilot/Mate License Preparation  Division: Maritime
Description: A complete review of all professional subjects studied in the Maritime program pragmatically developed to reflect the essentials of the U.S. Coast Guard examinations. The final grade for this course is dependent on taking the U.S. Coast Guard license exam. Must complete all MDK courses with a 2.0 or better. (This course is for GLMA cadets only.) Group 2 course.
Prerequisite(s): MDK 312 or instructor permission.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: None

Course: MDK 404, Marine Supervisory Lab  Division: Maritime
Description: This course will provide senior cadets with the experience of supervising subordinate cadets. This experience will include job planning, sequencing of tasks, tools and equipment needed, and personnel required to complete the job. The student will experience what it will be like to be responsible for the crew both in terms of safety and output.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: None

Course: MDK 411, Marine Communications  Division: Maritime
Description: This course is designed to acquaint the students with the Global Maritime and Distress Safety system. It includes the basic layout of the GMDSS, communication equipment requirements, licensing requirements, principles and procedures for marine communications, the characteristics of radio wave propagation, frequencies, and modulation. Included also is the Morse Code, Flashing Light and general Distress Signals. STCW.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 122.

Course: MDK 431, ECDIS  Division: Maritime
Description: The purpose of this course is to meet the training requirements is STCW, as amended, for the operational use of Electronic Chart Display and Information Systems (ECDIS). This course provides the knowledge, skill and understanding of ECDIS emphasizing both the application and learning of ECDIS in a variety of underway contexts. This is achieved through use of a sophisticated navigation simulation integrated with a type-approved ECDIS.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended
Prerequisites: Recommended competencies: MTH 111 or higher; placement into ENG 111.
Course: MDK 444, Cargo Systems  Division: Maritime  
Description: An in-depth study of the Great Lakes self-unloading vessel, container vessels, tankers, passenger vessels, regulations concerning hazardous materials, government regulations and the relationship between vessel and shoreside operations.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 445, Liquid Cargo Stowage  Division: Maritime
Description: A study of the tanker industry and the operational aspects of the tank vessel, pollution, prevention, precautions and procedures; layouts of different types of tankers; operations sequence and oil tanker construction and terminology. USCG and OPA '90 regulations will be covered. STCW.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 446, Bridge Team Management  Division: Maritime
Description: The purpose of this course is to further develop, through the use of the Shiphandling Simulator, the cadet’s watch management and watch standing skills, bridge tem problem solving, and piloting procedures for various confined waterways on the Great Lakes and other waterways. The cadet will be required to operate the normal pilot house equipment, manage bridge personnel, and be familiar with the paperwork required in the operation of a vessel. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 448, Pilot/Mate License Prep  Division: Maritime
Description: A complete review of all professional subjects studied in the Maritime program pragmatically developed to reflect the essentials of the U.S. Coast Guard examinations. The final grade for this course is dependent on taking the U.S. Coast Guard exam. Cadets must complete all MDK courses with a 2.0 or better. (This class is for GLMA cadets only).
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MDK 454, GMDSS  Division: Maritime
Description: The purpose of this course is to meet the training requirements in STCW code, as amended, for the General Operator’s Certificate for the Global Maritime Distress and Safety System (GMDSS). A student successfully completing this course and passing the prescribed examination will be licensed and enabled to efficiently operate a ship station’s GMDSS equipment, and to have primary responsibility for radio communications during Distress incidents.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Requisites: None  Recommended Prerequisites: Recommended competencies: Elementary computer skills.

MFG – Manufacturing Technology

Course: MFG 103, Manufacturing Processes  Division: Technical
Description: This course explores the principles of production technology as they relate to construction and manufacturing, using four major types of knowledge: science, technology, humanities, and descriptive. Students will learn the entire production cycle used in various industries, from raw materials to consumer products, and develop a heightened awareness of the by-products of those processes. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: Completion of first academic year Co-Requisites: None  Recommended Prerequisites: Recommended competencies: ENG 111 and MTH 111.
Course: MFG 104, Fluid Power  
Division: Technical

Description: The Fluid Power course is designed to provide students with a basic understanding of the concepts and applications of fluid power technology and the necessary skills for further study in the field. The course is an overview of fluid power technology applications; the general concept of fluid power systems; an introduction to energy input, energy output, energy control, and systems auxiliary components; as well as the design and function of components. Group 2 course.

Credit Hours: 4  
Contact (Billing) Hours: 5  
Group Attribute: Group Two Course

Required Prerequisites: None  
Co-Requisites: MFG 104L  
Recommended Prerequisites: ENG 97/107, MTH 23

Course: MFG 104L, Basic Fluid Power Lab  
Division: Technical

Description: See MFG 104 for course description.

Credit Hours: 0  
Contact (Billing) Hours: 0  
Group Attribute: Group Two Course

Required Prerequisites: None  
Co-Requisites: MFG 104

Recommended Prerequisites: Recommended competencies: ENG 99, MTH 23

Course: MFG 111, Math for Manufacturing  
Division: Technical

Description: This course will apply principles of mathematics, geometry, and basic trigonometry to applications in manufacturing. Topics will include proportions, calculation of machine speed and feed and geometric relationships of triangles and circles. Problem solving will require the use of the Pythagorean Theorem and the sine, cosine, and tangent functions to solve right triangles. The Law of Sines and Law of Cosines will be used to solve oblique triangle applications. Group 2 course.

Credit Hours: 3  
Contact (Billing) Hours: 3  
Group Attribute: Group Two Course

Required Prerequisites: MTH 23 or placement into MTH 111  
Co-Requisites: None  
Recommended Prerequisites: None

Course: MFG 113, Machining I  
Division: Technical

Description: The student will be introduced to measurement and the safe use of layout and bench tools, drill press operations, and basic lathe facing and turning operations. Basic vertical milling operations will also be included. Group 2 course.

Credit Hours: 3  
Contact (Billing) Hours: 5  
Group Attribute: Group Two Course

Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: MFG 114, Machining II  
Division: Technical

Description: This course will introduce students to machining procedures beyond the basic operations. The student should have previously acquired basic machining knowledge and skills. Lathe procedures will include threading, boring, and cutting tapers. Milling operations will include the offset boring head, indexing, and keyseats. Students will perform precision grinding of parallel and angular surfaces using gauge blocks and a sine bar. Electrical Discharge Machining (EDM) will be introduced. Students will study the processes and perform hands-on operations. Group 2 course.

Credit Hours: 3  
Contact (Billing) Hours: 5  
Group Attribute: Group Two Course

Required Prerequisites: MFG 113  
Co-Requisites: None  
Recommended Prerequisites: None

Course: MFG 290, Manufacturing Tech Internship  
Division: Technical

Description: The purpose of the internship is to provide on-the-job training for the student who wishes to pursue a career in a technical field of study. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10-15 hours per week in this paid, supervised on-the-job training experience. In addition to the required 50 hours per credit in a work site, students participate in semi-monthly seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.

Credit Hours: 2-4  
Contact (Billing) Hours: 2-4  
Group Attribute: Group Two Course

Required Prerequisites: 30 credits of program specific courses with a GPA of 2.0 or higher.  
Co-Requisites: None  
Recommended Prerequisites: None

Course: MFG 304, Marine Hydraulics  
Division: Technical

Description: Marine Hydraulics focuses on the systems, applications, hydraulics, and safety requirements specific to the marine and offshore ROV environments. The design, repair and maintenance of launch and recovery equipment, hoses, sensors and components associated with ROV hydraulics systems will be emphasized. Students will use test equipment and protocols to develop trouble shooting methods to analyze and integrate this technology. Group 2 course.

Credit Hours: 4  
Contact (Billing) Hours: 5  
Group Attribute: Group Two Course

Required Prerequisites: MFG 104, MTH 111  
Co-Requisites: None  
Recommended Prerequisites: None
MGT – Management

Course: MGT 241, Principles of Management  Division: Business
Description: What do managers actually do? This applications-oriented course will teach you the basics of day-to-day managerial work-planning, organization, leading, and controlling. Realistic scenarios are explored in leadership, communication, planning, conflict, strategy, problem solving, and working in teams. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: BUS 101, placement into ENG 111

Course: MGT 245, Principles of Entrepreneurship  Division: Business
Description: This course provides practical knowledge needed for entrepreneurs with special attention focusing on creativity, opportunity, and feasibility of a new start up. Sources of funding and resources for small ventures are addressed in depth in this course to prepare the learner for practical application. This course primarily focuses on idea generation and startup of the business including risk, funding sources, cash flow, and awareness of external environmental factors that impact the business. The course project is the development of a feasibility study or related project. Feasibility studies include the extent to which an idea is viable, realistic, and the extent to which the entrepreneur is aware of internal and external forces that could affect the business. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: BUS 101, MKT 201

Course: MGT 246, Entrepreneur Marketing and Finance  Division: Business
Description: This course provides the student with a micro-business experience in which teams will start, manage, and close an enterprise in 15 weeks. An in-depth focus and experience on marketing and finance issues unique to entrepreneurs will be provided. Topics include niche marketing, guerilla marketing, strategic partnerships, social media, e-marketing to international markets, capital resource acquisition, cash flow, pro-forma planning, strategic ownership models, sales skills and strategy. The topics are put into play by the assignment of a community business mentor. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: MGT 245 or instructor permission  Co-Requisites: None  Recommended Prerequisites: ACC121, MKT 201

Course: MGT 251, Human Resources Management  Division: Business
Description: Human Resource managers are especially challenged today navigating employment waters that require expertise in employment legislation, recruitment, selection, training and development, compensation, labor relations, safety and health. Theory and practice of these topics are explored with special emphasis on day-to-day applications in the workplace. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: BUS 101, placement into ENG 111

Course: MGT 290, Management Internship  Division: Business
Description: The purpose of the internship is to provide on-the-job training for the student who wishes to pursue a career in Management. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10-15 hours per week in this paid or unpaid, supervised on-the-job training experience. In addition to the required 50 hours per credit in a work site, students participate in three seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 30 credits of program specific courses with a GPA of 2.0 or higher  Co-Requisites: None  Recommended Prerequisites: None

MKT – Marketing

Course: MKT 201, Principles of Marketing  Division: Business
Description: This course surveys the wide scope of marketing as it influences both profit and nonprofit firms with emphasis on the marketing concept as a business philosophy. Ethics, globalization, and technological advances in marketing will be explored. Elements of the marketing mix and the elements of the promotional mix will be studied and incorporated into a marketing plan. Target marketing and segmentation of consumer markets along with consumer buying behavior will be studied in this course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: BUS 101, placement into ENG 111
Course: MKT 208, Digital Marketing  Division: Business
Description: Students will learn how to develop a digital marketing strategy which may include display ads, search marketing, content marketing, email marketing and social media marketing. Developing an awareness of digital marketing strategies leads to an informed, critical internet consumer. Basic email and internet usage skills required. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MKT 241, Principles of Advertising  Division: Business
Description: This course will prepare the learner with an understanding of the real economic, social, and cultural impact of advertising and conversely, the impact of society's values on advertising. The strategic function of advertising within the broader context of business and marketing will be discussed in this course. The creative aspects of advertising will be studied, and students will develop an advertising campaign or related project. The global effect of marketing and advertising on business and national economies will be addressed along with ethical issues related to truth in advertising in today's society. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: BUS 101, placement into ENG 111

Course: MKT 290, Marketing Internship  Division: Business
Description: The purpose of the internship is to provide on-the-job training for the student who wishes to pursue a career in Marketing. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10-15 hours per week in this paid or unpaid, supervised on-the-job training experience. In addition to the required 50 hours per credit in a work site, students participate in three seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: 30 credits of program specific courses with a GPA of 2.0 in occupational courses  Co-Requisites: None  Recommended Prerequisites: None

MNG – Maritime Engineering

Course: MNG 100, Intro to Marine Engineering  Division: Maritime
Description: This course is a general introduction to the shipboard Engine Room. The duties and responsibilities of the engine room personnel will be covered. The course will include an introduction to the engine room propulsion systems (Diesel and Steam), and a study of the operation of the ship's steering gear and deck machinery. This course provides a foundation for the deck and engineering cadet to build upon in his/her program of study.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None

Course: MNG 104, Engine Systems Graphics  Division: Maritime
Description: The course will introduce the student to the proper use of measuring systems and drafting equipment. The course will develop the correct techniques used in the production of multiview projection, orthographic representation, auxiliary views, section views, and dimensioning. The student will be familiar with the correct (ANSI) symbols used in piping, electrical, and fluid power schematics. The student will be instructed in the use of AutoCAD LT to produce the listed topics. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: MNG 110  Recommended Prerequisites: None

Course: MNG 105, Shipboard Information Systems  Division: Maritime
Description: This course will introduce the student to techniques in brainstorming, consensus building, and decision making. Building flow charts for process flow and control will be covered. Using the PC aboard ship and in the marine environment will be covered. Maritime specific software such as NS5 will be demonstrated. The effective use of simulation as part of training and upgrading will be covered.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: None
Course: MNG 110, Engineering Mechanics  Division: Maritime
Description: Survey of the construction, operation, and maintenance of shipboard systems. The major emphasis will be on piping, valves, control valves, and pumps. Practical application of the above items will be supported in the lab portion of this course. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: MNG 104  Recommended
Prerequisites: None

Course: MNG 234, Electronic Fundamentals  Division: Maritime
Description: This course bridges the gap between theoretical physics and practical hands-on technology. Industrial electrical safety, shock hazards, and emergency procedures are stressed. The cadet receives practical hands-on practice with both digital, analog meters and oscilloscopes. Digital and analog circuits are constructed and examined both in the lab and with computer simulations. Practical considerations of circuit construction in the field are discussed in terms of ABS, USCG, and IEEE regulations and requirements. The cadet is also introduced to concepts of logic with emphasis being placed on the understanding and construction of ladder diagrams and the use of truth tables for troubleshooting electronic circuits. STCW.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended
Prerequisites: None

Course: MNG 250, Unloading Systems  Division: Maritime
Description: This course will introduce the cadet to the shipboard Unloading Systems used aboard Great Lakes Bulk Carriers. The cadet will study the operation and maintenance of this unloading equipment. This instruction is supported by work in the lab. A review of Pollution Regulations will also be covered. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended
Prerequisites: None

Course: MNG 260, Maritime Machining  Division: Maritime
Description: This is a basic course that when completed a student will know the fundamentals and be able to operate common machine tool equipment like an engine lathe, band saw and horizontal and vertical milling machine. Also covered will be measuring and inspection tools, drill press and surface plate.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: Completion of first academic year; All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: MTH 111 or higher; placement into ENG 111.

Course: MNG 271, Maritime Welding  Division: Maritime
Description: A welding theory and practice course offered as an elective to anyone interested in welding. Manipulative skills are emphasized for the gas metal arc, shielded metal arc, oxy-fuel and braze welding processes. An introduction to plasma arc cutting, gas tungsten arc, resistance spot welding, stud welding and plastic welding is included. Appropriate reading assignments are included.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: Completion of first academic year; All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: MTH 111 or higher; placement into ENG 111.

Course: MNG 275, Refrigeration  Division: Maritime
Description: This course provides instruction in the operation and maintenance of refrigeration and air conditioning equipment used on merchant vessels. It covers the theory of refrigeration and the practical operation of refrigeration plants. Lecture is reinforced with the use of hands-on labs. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  Co-Requisites: None  Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.
Course: MNG 314, Diesel Engineering  Division: Maritime
Description: A comprehensive course dealing with the development of the diesel engine as it applies to marine propulsion. This course is designed to cover the construction, operation, and maintenance of the marine diesel engine and its support systems. Lecture is reinforced with extensive use of hands-on labs and computerized simulations. STCW.
Credit Hours: 7  Contact (Billing) Hours: 7  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: None
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MNG 317, Engineering Sea Project I  Division: Maritime
Description: During this course the cadet is on board the TS State of Michigan. The cadet follows a prescribed course of study in vessel operations with particular emphasis on engine room and auxiliary equipment, including safety requirements. In addition, the cadet spends eight hours a day under the supervision of a licensed officer gaining experience in various engineering duties and responsibilities. STCW.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: None
Prerequisites: None

Course: MNG 318, Engineering Sea Project II  Division: Maritime
Description: This course is a continuation of MNG 317 and is designed to provide the cadet with advanced knowledge and sailing time to meet the licensing requirements of the U.S. Coast Guard, STCW and the criteria established by the Maritime Administration. STCW.
Credit Hours: 6  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: None
Prerequisites: None

Course: MNG 319, Engineering Sea Project III  Division: Maritime
Description: This course is a continuation of MNG 318 and is designed to provide the cadet with advanced knowledge and sailing time to meet the licensing requirements of the U.S. Coast Guard, STCW and the criteria established by the Maritime Administration. STCW.
Credit Hours: 6  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: None
Prerequisites: None

Course: MNG 321, Marine Boilers  Division: Maritime
Description: This is an intensive study of marine boilers and covers all types of water tube boilers. Emphasis is placed on construction, operation and Maintenance of equipment. Sub systems such as fuel handling and combustion chemistry; air handling; water preparation and chemistry; automated combustion systems; and water regulation systems are covered in detail. Special emphasis is placed on USCG regulations and STCW competencies. STCW.
Credit Hours: 3.5  Contact (Billing) Hours: 3.5  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: None
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MNG 322, Marine Turbines  Division: Maritime
Description: This course is an in-depth study of marine turbine propulsion plants. It covers theory, construction, operation, maintenance and inspection procedures typically associated with marine use. Associated systems such as lubrication, exhaust and condensate systems are also covered. Drive trains, reduction gear, stern tubes shafting and propellers are also discussed. STCW.
Credit Hours: 2.5  Contact (Billing) Hours: 2.5  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: None
Prerequisites: Recommended competencies: ENG 111 and MTH 111.
Course: MNG 323, Marine Steam Lab  Division: Maritime
Description: This is a hands-on course intended to reinforce MNG 321 and MNG 322. Students will disassemble, inspect, and reassemble machinery typical of what is found aboard ship. Machinery condition will be noted and recommendations made. Machinery records will be updated. STCW.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: None  Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MNG 335, Electric Machines and Controls  Division: Maritime
Description: This course covers the theory, application, operation, and maintenance of rotating machines as typically found aboard U.S. Merchant Ships and related industrial applications. Generators (DC and AC), motors (DC, multiple and single phase AC), transformers, and related equipment are covered. Special attention is given to magnet relay and electronic logic control circuits. Regulations specific to CFR title 46 and IEEE are reviewed. STCW.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: MNG 336  Recommended
Prerequisites: None

Course: MNG 336, Electric Mach. & Controls Lab  Division: Maritime
Description: This course is a companion class to MNG 335. Course material is reinforced with practical hands-on experience with universal electrical lab machinery. The operating characteristics of typical rotating machines are studied. Special attention is given to problems associated with multiple generator AC distribution. Safe and effective troubleshooting techniques are practiced on live 110/208 volt electrical control systems. STCW.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: MNG 335  Recommended
Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MNG 455, Watchstanding  Division: Maritime
Description: Engineering simulators are used to strengthen the watchstanding skills of the engineering cadet. The cadet will be required to operate shipboard systems, manage engine room personnel, and become familiar with the paper work required in the operation of a modern engine room.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: MNG 466, MNG 496  Recommended Prerequisites: Recommended competencies: ENG 111 and MTH 111.

Course: MNG 466, Engine Room Business  Division: Maritime
Description: Cadets are introduced to the everyday management and administrative activities confronting the Marine Engineer. The cadet will be introduced to management and personnel skills necessary to deal with people problems peculiar to the marine environment. General issues of alcohol, drug abuse, and sexual harassment in the marine environment will be discussed and placed in perspective with USCG and STCW protocols. Other necessary skills such as program planning, flow-charting, recordkeeping, etc. will be introduced and practiced in scenarios. Legal considerations for the ship’s officer such as log books, union contracts, certificates, evaluations, inspections, regulations, etc. will be introduced and discussed.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head. Co-Prerequisites: MNG 455, MNG 496  Recommended Prerequisites: Recommended competencies: ENG 111 and MTH 111.
Course: MNG 496, License Preparation - Engine  
**Division:** Maritime

**Description:** A complete review of all professional subjects studied in the Maritime Engineering program. This course is designed to cover the essentials of the Third Assistant Engineer’s examination administered by the U.S. Coast Guard. The final grade for this course is dependent on taking the U.S. Coast Guard license exam.

**Credit Hours:** 2  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** All prerequisites for all GLMA courses are satisfied by following the approved curriculum guide and any deviation for the curriculum guide needs to be approved by the department head.  
**Co-Requisites:** MNG 455, MNG 466  
**Recommended Prerequisites:** Recommended competencies: ENG 111 and MTH 111.

**MNS – Naval Science**

Course: MNS 100, Naval Science  
**Division:** Maritime

**Description:** This course is required of all Maritime Academy cadets and is an introduction to Naval Science specifically oriented toward Merchant Marine officers. It is intended to familiarize students with the role of the Merchant Marine in national defense and policy and with the various concepts of cooperation between the Navy and the Merchant Marine Industry. Group 2 course.

**Credit Hours:** 2  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: MNS 200, Naval Science II  
**Division:** Maritime

**Description:** This course is required of all Maritime Academy cadets who are Midshipmen in the Merchant Marine Reserve/U.S. Naval Reserve program. It familiarizes the student with naval missions and heritage as well as to assist the Merchant Marine officer make the transition from civilian to sailor. Group 2 course.

**Credit Hours:** 2  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** MNS 100  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

Course: MNS 250, Leadership and Ethics  
**Division:** Maritime

**Description:** This course is required of all Maritime Academy cadets who are midshipmen in the Merchant Marine Reserve/U.S. Naval Reserve program. It introduces students to western moral traditions and ethical philosophy with a variety of topics, such as military leadership, core values, and professional ethics that will prepare them for their role and responsibilities as a leader in the U.S. Navy of the 21st century. Group 2 course.

**Credit Hours:** 2  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course  
**Required Prerequisites:** MNS 200 or instructor permission  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

**MTH – Mathematics**

Course: MTH 08, Pre-Algebra  
**Division:** Science & Math

**Description:** This course is a review of basic arithmetic skills in a lecture-based format with online homework and e-text. Basic operations, and the other of operations are reviewed, and then opened to signed numbers, i.e. the integers. The course then proceeds through prime factorization, and all operations with fractions and mixed numerals. After this thorough presentation of fractions, it continues with decimal notation, and a fresh look at ratios and proportions. Percent notation and several practical applications of percentages are covered. The course finishes with measurement, in both English and metric units, along with their application to polygons and three-dimensional solids. Measurement conversions are done with conversion factors, serving as an introduction to dimensional analysis. Use of the scientific calculator is encouraged throughout the course, except for the review of basic hand calculations, which require the student to demonstrate the ability to carry out calculations by standard algorithms.

**Credit Hours:** 4  
**Contact (Billing) Hours:** 4  
**Group Attribute:**  
**Required Prerequisites:** Based on placement testing. See advisor  
**Co-Requisites:** None  
**Recommended Prerequisites:** Basic mathematical skills.
Course: MTH 23, Beginning Algebra  Division: Science & Math
Description: The course covers the arithmetic of integers and rational numbers, the properties of integral exponents, addition, subtraction, and multiplication of polynomials and factoring of polynomials. Solving linear equations, quadratic equations, and proportions is also covered. Basic graphing of linear functions is covered, including slope, x and y-intercepts. Problem solving is stressed, including unit conversions. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute:
Required Prerequisites: MTH 08 or MTH 08A and MTH 08B with a 2.0 or higher or appropriate placement score  Co-Requisites: None  Recommended Prerequisites: None

Course: MTH 111, Intermediate Algebra  Division: Science & Math
Description: Intermediate Algebra covers elementary set notation, a description of the Real number system and its major subsets, and an introduction to the Complex number system. Solving linear, quadratic and rational equations and inequalities, as well as radical equations and systems of equations is also covered. The course includes an investigation of graphical, numerical, and symbolic representations and manipulations of various functions including linear, rational and quadratic. Matrices are introduced; properties of integral exponents are reviewed and extended to rational exponents. Intermediate algebra also covers simplifying, adding, subtracting and multiplying radicals. Problem solving and the function concept are integrated throughout. This course is offered in multiple formats such as online or traditional; consult an advisor before enrolling. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: MTH 23 or MTH 23A and MTH 23B with a 2.0 or higher or appropriate placement score  Co-Requisites: None  Recommended Prerequisites: None

Course: MTH 116, Intro to Computer Science  Division: Science & Math
Description: A high level computer language (currently Java) will be used to provide a thorough introduction to computer science, object-oriented programming, problem solving, and algorithm and data structure development. Illustrative applications and programming assignments will be given. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: MTH 111 or appropriate placement score  Co-Requisites: None  Recommended Prerequisites: None

Course: MTH 120, Mathematical Explorations  Division: Science & Math
Description: This course is designed for students whose programs of study have no further math requirements. This course is designed to develop quantitative reasoning skills as applied to personal and social issues. Topics will convey to the student the beauty and utility of mathematics, and its applications to modern society. Core topics include logic, models of growth (linear & exponential), personal finance, basic statistics and probability. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: MTH 23 or MTH 23A and MTH 23B with a 2.0 or higher or appropriate placement score  Co-Requisites: None  Recommended Prerequisites: None

Course: MTH 121, College Algebra  Division: Science & Math
Description: This course continues the development of algebraic skills begun in MTH 111. The topics covered include functions, mathematical models, solving equations algebraically and graphically, polynomial, logarithmic, exponential functions, inverse functions, and linear and non-linear systems of equations. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: MTH 111 or higher (excluding MTH 131, MTH 205 and MTH 206) or appropriate placement score  Co-Requisites: None  Recommended Prerequisites: None

Course: MTH 122, Trigonometry  Division: Science & Math
Description: This course covers the definition and graphic representation of the trigonometric functions. Triangles, angle measure, equations, identities, and inverse functions are discussed in detail. Law of Sines, Law of Cosines, and equations of the conic sections will also be covered. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: MTH 121 or higher (excluding MTH 131, MTH 205 and MTH 206) or appropriate placement score  Co-Requisites: None  Recommended Prerequisites: None
Course: MTH 131, Intro to Prob & Stats Division: Science & Math
Description: Descriptive statistics, experimental design, an introduction to probability concepts and inferential statistics are included in this course. Descriptive statistics includes graphical representations such as histograms, bar charts, pie charts, boxplots, stemplots, scatterplots, and the normal curve. Measures of central tendency such as the mean and median, and measures of variation such as the standard deviation and quartiles are studied. The normal density function and linear regression are included. One and two sample problems involving confidence intervals and significance tests are studied for the sample mean and the sample proportion. This course is offered in multiple formats such as online or traditional; consult an advisor before enrolling. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes. Group 1 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group One Course
Required Prerequisites: MTH 111 or higher or appropriate placement score Co-Requisites: None Recommended Prerequisites: None

Course: MTH 141, Calculus I Division: Science & Math
Description: This is the first course in a traditional calculus sequence, emphasizing the development of the mathematical thought process. The topics covered include limits (definitions and limit proofs), continuity, derivatives of algebraic and trigonometric functions, applications of the derivative, the indefinite and definite integral, the fundamental theorem of calculus, and applications of integration. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes. Group 1 course.
Credit Hours: 5 Contact (Billing) Hours: 5 Group Attribute: Group One Course
Required Prerequisites: MTH 122 or MTH 140 or higher or appropriate placement scores Co-Requisites: None Recommended Prerequisites: None

Course: MTH 142, Calculus II Division: Science & Math
Description: This course is a continuation of Calculus I. The topics include differentiation and integration involving exponential, logarithmic, and inverse trigonometric function. There is an introduction of various integration methods. L'Hospital's Rule, improper integrals, parametric equations, polar coordinates, and infinite sequences and series are also investigated. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes. Group 1 course.
Credit Hours: 5 Contact (Billing) Hours: 5 Group Attribute: Group One Course
Required Prerequisites: MTH 141 Co-Requisites: None Recommended Prerequisites: None

Course: MTH 241, Calculus III Division: Science & Math
Description: The course covers multivariable calculus including three-dimensional analytical geometry, vector valued functions, partial differentiation, and multiple integration (with applications of each). Also an introduction to linear algebra will be covered. Students are REQUIRED to have and learn to use a TI-84 graphing calculator for ALL math classes. Group 1 course.
Credit Hours: 4 Contact (Billing) Hours: 4 Group Attribute: Group One Course
Required Prerequisites: MTH 142 Co-Requisites: None Recommended Prerequisites: None

Course: MTH 251, Differential Equations Division: Science & Math
Description: Introduces the concepts of differential equations and of linear algebra. Topics include: solving linear and systems of linear differential equations, Laplace transformations and their physical applications. Solutions are found using analytical, numerical, and/or graphical techniques relating to quantitative modeling and Laplace transforms. Linear algebraic topics include: vector spaces, subspaces, spanning sets, linear dependence and independence, basis and dimensions, eigenvalues, eigenvectors, and linear transformations. Group 1 course.
Credit Hours: 4 Contact (Billing) Hours: 4 Group Attribute: Group One Course
Required Prerequisites: MTH 142 Co-Requisites: None Recommended Prerequisites: MTH 142 with a 2.0 or higher or equivalent, ENG 111, ENG 112
MUS – Music

**Course:** MUS 90, Applied Music-Remedial Instruction  
**Division:** Humanities

**Description:** MUS 90 is remedial instruction for students wanting to take 100 level applied instruction in voice, piano, organ, guitar, or any of the traditional wind, percussion or string instruments, but lack either music reading, technical skills, artistic skills or tone production skills. An audition and interview, or if no music is prepared, only an interview will take place to determine the competency levels of a student. This course does not apply toward graduation. MUS 90 level instruction can be repeated until remediation is complete. Students will meet with an assigned faculty member for weekly instruction at a pre-arranged time and place. Materials specific to the students' needs will be assigned. The Applied Faculty will recommend to the acting Department Chair when the competencies have been met.

**Credit Hours:** 1  
**Contact (Billing) Hours:** 1  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** None  
**Recommended Prerequisites:** None

**Course:** MUS 100A, Intro to Music Theory I  
**Division:** Humanities

**Description:** Intro to Music Theory I is designed for students who are pursuing music as an academic major or minor, particularly for those who need further work before entering MUS 101. This course focuses on the basic materials of music: the structures of tonality, harmonic progression, and the technique of harmonization. Students are required to complete and analyze music, using practices listed above. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** MUS 105A, MUS 106  
**Recommended Prerequisites:** None

**Course:** MUS 100B, Intro to Music Theory II  
**Division:** Humanities

**Description:** Intro to Music Theory II is designed for students who are pursuing music as an academic major or minor, particularly for those who have completed MUS 100A or its equivalent and are not yet prepared to enter MUS 101. This course builds on the fundamentals of MUS 100A and includes a focus on more complex rhythmic and harmonic structures. Students are required to complete and analyze music, using practices and skills learned in the course. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** MUS 100A  
**Co-Requisites:** MUS 105B, MUS 107  
**Recommended Prerequisites:** None

**Course:** MUS 101, Theory of Music  
**Division:** Humanities

**Description:** Theory of Music is a four-semester/two-year sequence of coursework designed for students who are pursuing music as an academic major or minor. The first year includes the basic materials of music: the structures of tonality, harmonic progression, and the technique of harmonization. Students are required to complete and analyze music using practices listed above. Group 2 course. Prerequisite(s): An understanding of music fundamentals.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** MUS 103, MUS 106  
**Recommended Prerequisites:** An understanding of music fundamentals

**Course:** MUS 102, Theory of Music  
**Division:** Humanities

**Description:** This course in Theory of Music is the second semester of a four-semester/two-year sequence of coursework designed for students who are pursuing music as an academic major or minor. The first year includes the basic materials of music: the structures of tonality, harmonic progression, and the technique of harmonization. Students are required to complete and analyze music using practices listed above. Group 2 course.

**Credit Hours:** 3  
**Contact (Billing) Hours:** 3  
**Group Attribute:** Group Two Course

**Required Prerequisites:** MUS 101  
**Co-Requisites:** MUS 104, MUS 107  
**Recommended Prerequisites:** None

**Course:** MUS 103, Sight Singing & Ear Training  
**Division:** Humanities

**Description:** This is the first of a four-semester/two year sequence of coursework designed for students who are pursuing music as an academic major or minor. The content of this course is the building of skills in reading music, and developing aural competency in interval relationships, scales, and triads, through a variety of musical practices. Group 2 course.

**Credit Hours:** 1  
**Contact (Billing) Hours:** 2  
**Group Attribute:** Group Two Course

**Required Prerequisites:** None  
**Co-Requisites:** MUS 101, MUS 106  
**Recommended Prerequisites:** An understanding of music fundamentals
Course: MUS 104, Sight Singing & Ear Training  Division: Humanities  
Description: This is the second of a four-semester/two year sequence of coursework designed for students who are pursuing music as an academic major or minor. The content of this course is a continued building of skills as listed in MUS 103 through a variety of musical practices. Group 2 course.  
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: MUS 103 or equivalent competency  Co-Requisites: MUS 102, MUS 107  Recommended Prerequisites: None

Course: MUS 105A, Intro to Ear Training I  Division: Humanities  
Description: This coursework is designed for students who are pursuing music as an academic major or minor, particularly for those who need further work before entering MUS 103. The content of this course is the building of skills in reading music, and developing aural competency in interval relationships, scales, and triads, through a variety of musical practices, principally the voice. Group 2 course.  
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: Music Theory placement test  Co-Requisites: MUS 100A, MUS 106  Recommended Prerequisites: None

Course: MUS 105B, Intro to Ear Training II  Division: Humanities  
Description: This coursework is designed for students who are pursuing music as an academic major or minor, particularly for those who have completed MUS 105A or its equivalent and are not yet ready for MUS 103. This course will build on the skills learned in MUS 105A and will focus on developing more advanced skills, in reading music, aural competency in interval relationships, scales, and triads, through a variety of musical practices, principally the voice. Group 2 course.  
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: MUS 105A  Co-Requisites: MUS 100B, MUS 107  Recommended Prerequisites: None

Course: MUS 106, Class Piano I  Division: Humanities  
Description: Piano study for the beginning or near-beginning student. Cultivation of technical-musical awareness and keyboard playing ability, individually and in ensemble. This is a Group 2 Course.  
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 107, Class Piano II  Division: Humanities  
Description: This course is the second of a four-semester/ two-year sequence of the study of piano. Objectives are the cultivation of technical-musical awareness and keyboard playing ability. Group 2 course.  
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course  
Required Prerequisites: MUS 106 or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 110, Music Appreciation Stand Lit  Division: Humanities  
Description: This course is a survey of the history of Western Music from medieval Europe to the present. Each music era of Western culture will be examined in regards to significant composers and compositions. This course places a strong emphasis on learning to listen and also provides students the opportunity to become familiar with the basic elements of music. No musical background or training is assumed or required. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 111, Music Appreciation Jazz  Division: Humanities  
Description: Jazz Appreciation is a survey of the stylistic and historical elements of jazz from its earliest beginnings and influences through the contemporary jazz scene. Emphasis is placed on listening to the significant jazz artists and styles of each period of jazz. The class will also introduce students to the many musical characteristics, techniques, and terms found in the jazz tradition, as well as their historical significance. No musical background or training is assumed or required. Group 1 course.  
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: MUS 112, Class Guitar I  Division: Humanities
Description: This course is designed for the student who wishes to acquire basic knowledge and techniques for guitar playing. The instruction introduces the basic information of music notation, as well as mechanical skills for the development of individual playing ability. The format is a structured approach covering hand position, fundamentals of reading music and chord knowledge. Repertoire will include Folk music, popular music and the Blues, and will utilize both strumming and picking techniques. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 113, Class Guitar II  Division: Humanities
Description: This course is a continuation of MUS 112. Emphasis is placed on developing music reading skills for the guitar, along with further development of Folk picking techniques and understanding of the Blues. An introduction to Jazz chords along with fundamentals of music theory will also be presented. Group 2 course. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 112

Course: MUS 114, NMC Grand Traverse Chorale  Division: Humanities
Description: This large, mixed (SATB) choral ensemble is open to all students with past choral experience. The Grand Traverse Chorale provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on large masterworks. Performance excellence is principal to the purpose of the ensemble. The Grand Traverse Chorale performs throughout the semester and frequently performs with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: Choral experience or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 115, NMC Grand Traverse Chorale  Division: Humanities
Description: MUS 115 is a continuation of rehearsal and performance as begun in MUS 114. This large, mixed (SATB) choral ensemble is open to all students with past choral experience. The Grand Traverse Chorale provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on large masterworks. Performance excellence is principal to the purpose of the ensemble. The Grand Traverse Chorale performs throughout the semester and frequently performs with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 114 or instructor permission

Course: MUS 116, NMC Chamber Singers  Division: Humanities
Description: This mixed (SATB) choral ensemble is open to all students with past choral experience. The Chamber Singers provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on newer works and works for small choral ensembles. Performance excellence is principal to the purpose of the ensemble. The Chamber Singers perform throughout the semester and frequently perform with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: Choral experience or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 117, NMC Chamber Singers  Division: Humanities
Description: MUS 117 is a continuation of rehearsal and performance as begun in MUS 116. This mixed (SATB) choral ensemble is open to all students with past choral experience. The Chamber Singers provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on newer works and works for small choral ensembles. Performance excellence is principal to the purpose of the ensemble. The Chamber Singers perform throughout the semester and frequently perform with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 116, equivalent experience or audition by instructor
Course: MUS 118, NMC Concert Band  Division: Humanities
Description: This course will provide a survey of significant concert and symphonic band repertoire. Students will learn performance techniques on their instrument as are relevant to the concert band medium. Students will also learn the role that their instrument plays within the context of a concert band. Generally, two to four concerts will be performed each semester. Students must have a high school level competency on a wind or percussion instrument. An audition or personal interview with the conductor will be required for placement in the ensemble. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: Previous band experience  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 119, NMC Concert Band  Division: Humanities
Description: MUS 119 is a continuation of rehearsal and performance as begun in MUS 118. This course will provide a survey of significant concert and symphonic band repertoire. Students will learn performance techniques on their instrument as are relevant to the concert band medium. Students will also learn the role that their instrument plays within the context of a concert band. Generally, two to four concerts will be performed each semester. Students must have a high school level competency on a wind or percussion instrument. An audition or personal interview with the conductor will be required for placement in the ensemble. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 118 or previous band experience

Course: MUS 120, NMC Jazz Band  Division: Humanities
Description: A course for the performer with a focus on big band jazz ensemble techniques and styles. A wide range of jazz styles are covered including swing, be-bop, ballads, rock/fusion and Latin. Some improvisation is briefly explored and always encouraged, although it is not the main focus of this course. A minimum of one concert will be performed each semester and all members are required to attend and participate in all scheduled performances. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: Previous band or jazz band experience or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 121, NMC Jazz Band  Division: Humanities
Description: A course for the performer with a focus on big band jazz ensemble techniques and styles. A wide range of jazz styles are covered including swing, be-bop, ballads, rock/fusion and Latin. Some improvisation is briefly explored and always encouraged, although it is not the main focus of this course. A minimum of one concert will be performed each semester and all members are required to attend and participate in all scheduled performances. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 120, previous band or jazz band experience, or instructor permission

Course: MUS 124, NMC Collegiate Singers  Division: Humanities
Description: This choral ensemble is open to all students. The Collegiate Singers is designed for beginning and intermediate choral singers with specific instructional emphasis placed on singing and ensemble skills. This course will provide students with a broad base of skills that will be applicable to other choral ensembles in future collegiate years and beyond. The Collegiate Singers perform throughout the semester. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 125, NMC Collegiate Singers  Division: Humanities
Description: MUS 125 is a continuation of rehearsal and performance as begun in MUS 124. The choral ensemble is open to all students. The Collegiate Singers is designed for beginning and intermediate choral singers with specific instructional emphasis placed on singing and ensemble skills. This course will provide students with a broad base of skills that will be applicable to other choral ensembles in future collegiate years and beyond. The Collegiate Singers perform throughout the semester. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: MUS 127, Traverse Symphony Orchestra  Division: Humanities
Description: The study and performance of orchestral literature, both standard and contemporary. Performance is required for credit. Course is designed to give students basic knowledge of music fundamentals, styles and performance history. The TSO is open by audition in the late summer and early fall of the year, and gives 8-10 public concerts per year. Audition, rehearsal, and performance information is available through the music department. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 128, Traverse Symphony Orchestra  Division: Humanities
Description: The study and performance of orchestral literature, both standard and contemporary. Performance is required for credit. Course is designed to give students basic knowledge of music fundamentals, styles and performance history. The TSO is open by audition in the late summer and early fall of the year, and gives 8-10 public concerts per year. Audition, rehearsal, and performance information is available through the music department. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 127

Course: MUS 129, History of Rock and Roll  Division: Humanities
Description: This course will study the development of rock music styles from its roots to the present. We will watch historical footage and listen to musical examples of each musical period. Students will develop the ability to hear a direct relationship between the historical origins of rock music and the music currently popular. The class will include the analysis of the significant musical qualities and influential musicians of the different periods and styles of rock. The history and development of rock music will also be examined in the context of the political, historical, and social forces at work in the modern and post-modern world. Group 1 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 131 – 135 and 137 – 139, Ensembles in Applied Music I  Division: Humanities
Description: This course prepares students for public performance and develops abilities in ensemble techniques. Students study in small ensembles (duets, trios, quartets, quintets, and octets) under faculty direction. Students are expected to perform, at a minimum, for one Music Convocation each semester. Course number suffix A designates fall semester and suffix B designates spring semester. Permission of instructor is required. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 136A, Ensembles - Vocal Jazz I  Division: Humanities
Description: A small ensemble of men's and women's voices rehearses and performs vocal jazz works. Develop skills in vocal jazz styles, blending harmonies, microphone technique, and jazz theory. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 136B, Ensembles - Vocal Jazz I  Division: Humanities
Description: A small ensemble of men's and women's voices rehearses and performs vocal jazz works. Develop skills in vocal jazz styles, blending harmonies, microphone technique, and jazz theory. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Description: Private lessons for strings, brass, woodwinds, guitar, piano, voice, organ, and percussion are offered. Student may enroll for 1.0 credit (for a 30 minute, weekly lesson) or for 2.0 credits (for a 60 minute, weekly lesson). Music Majors should enroll for 2.0 credits. After registering for Applied Lessons, please contact Jeffrey Cobb, Director of Music Programs (jecobb@nmc.edu, or 995-1338), before or during the first week of classes for placement with an applied music instructor. A pre-arranged lesson time with the assigned instructor is arranged and studies/compositions, as appropriate, are prepared for continuing musical development. Students are expected to perform, at a minimum, for one Music Convocation each semester. Group 2 course.
Credit Hours: 1 - 2 Contact Hours: 1 – 2 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: MUS 201, Theory of Music  Division: Humanities
Description: The third semester of a four-semester/two year sequence of coursework designed for students who are pursuing music as an academic major. Harmonic analyzation, traditional and non-traditional compositional techniques and musical form make up the course content. Group 1 course. Prerequisite(s): The successful completion of MUS 101, 102, 103, 104, 106, 107 or the equivalent competency. Corequisite(s): MUS 203, 206 or Applied Piano Instruction.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: MUS 203, MUS 206  Recommended Prerequisites: The successful completion of MUS 101, MUS 102, MUS 103, MUS 104, MUS 106, MUS 107 or the equivalent competency

Course: MUS 202, Theory of Music  Division: Humanities
Description: The fourth semester of a four-semester/two year sequence of coursework designed for students who are pursuing music as an academic major. The course content is a continuation of MUS 201 with the addition of the study of 20th Century compositional and beginning counterpoint. Group 1 course. Prerequisite(s): The successful completion of MUS 101, 102, 103, 104, 106, 107, 206 or the equivalent competency. Corequisite(s): MUS 204, 207 or Applied Piano Instruction.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: MUS 204, MUS 207  Recommended Prerequisites: The successful completion of MUS 101, MUS 102, MUS 103, MUS 104, MUS 106, MUS 107, MUS 206 or the equivalent competency

Course: MUS 203, Sight Singing & Ear Training  Division: Humanities
Description: The third semester of a four-semester/two-year sequence of course work designed for students who are pursuing music as an academic major. The content of this course includes the building of skills in reading music, melodic and harmonic dictation and aural competency through a variety of musical practices, principally the voice. Group 2 course. Prerequisite(s): The successful completion of MUS 101, 102, 104, 106, 107 or the equivalent competency. Corequisite(s): MUS 201, 206 or Applied Piano Instruction.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: MUS 201, MUS 206  Recommended Prerequisites: The successful completion of MUS 102, MUS 104, MUS 107 or the equivalent competency

Course: MUS 204, Sight Singing & Ear Training  Division: Humanities
Description: The fourth semester of a four-semester/two-year sequence of course work designed for students who are pursuing music as an academic major. A continuation of MUS 203, this course deals with the building of advanced skills in reading music, melodic and harmonic dictation and aural competency through a variety of musical practices, principally the voice. Group 2 course. Prerequisite(s): The successful completion of MUS 101, 102, 103, 104, 106, 107, 206, or the equivalent competency. Corequisite(s): MUS 202, 207, or Applied Piano Instruction.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: MUS 202, MUS 207  Recommended Prerequisites: The successful completion of MUS 102, MUS 104, MUS 106, MUS 206 or the equivalent competency

Course: MUS 206, Class Piano III  Division: Humanities
Description: This is the third of a four-semester/two-year sequence of the study of piano. Objectives are the cultivation of technical-musical awareness and keyboard playing ability. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 107 or instructor permission

Course: MUS 207, Class Piano IV  Division: Humanities
Description: This is the fourth of a four-semester/two-year sequence of the study of piano. Objectives are the cultivation of technical-musical awareness and keyboard playing ability. A continuation of MUS 206. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 206 or instructor permission
Course: MUS 214, NMC Grand Traverse Chorale  Division: Humanities
Description: MUS 214 is a continuation of rehearsal and performance as begun in MUS 115. This large, mixed (SATB) choral ensemble is open to all students with past choral experience. The Grand Traverse Chorale provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on large masterworks. Performance excellence is principal to the purpose of the ensemble. The Grand Traverse Chorale performs throughout the semester and frequently performs with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 115, choral experience, or instructor permission

Course: MUS 215, NMC Grand Traverse Chorale  Division: Humanities
Description: MUS 215 is a continuation of rehearsal and performance as begun in MUS 214. This large, mixed (SATB) choral ensemble is open to all students with past choral experience. The Grand Traverse Chorale provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on large masterworks. Performance excellence is principal to the purpose of the ensemble. The Grand Traverse Chorale performs throughout the semester and frequently performs with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 214, choral experience, or instructor permission

Course: MUS 216, NMC Chamber Singers  Division: Humanities
Description: MUS 216 is a continuation of rehearsal and performance as begun in MUS 117. This mixed (SATB) choral ensemble is open to all students with past choral experience. The Chamber Singers provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on newer works and works for small choral ensembles. Performance excellence is principal to the purpose of the ensemble. The Chamber Singers perform throughout the semester and frequently perform with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 117, choral experience, or instructor permission

Course: MUS 217, NMC Chamber Singers  Division: Humanities
Description: MUS 217 is a continuation of rehearsal and performance as begun in MUS 216. This mixed (SATB) choral ensemble is open to all students with past choral experience. The Chamber Singers provides its members with an educational experience and personal enrichment made possible through singing of quality choral literature selected from Antiquity through the 21st Century with an emphasis on newer works and works for small choral ensembles. Performance excellence is principal to the purpose of the ensemble. The Chamber Singers perform throughout the semester and frequently perform with the Traverse Symphony Orchestra. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 216, choral experience, or instructor permission

Course: MUS 218, NMC Concert Band  Division: Humanities
Description: MUS 218 is a continuation of rehearsal and performance as begun in MUS 119. This course will provide a survey of significant concert and symphonic band repertoire. Students will learn performance techniques on their instrument as are relevant to the concert band medium. Students will also learn the role that their instrument plays within the context of a concert band. Generally, two to four concerts will be performed each semester. Students must have a high school level competency on a wind or percussion instrument. An audition or personal interview with the conductor will be required for placement in the ensemble. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 119 or previous band experience
Course: MUS 219, NMC Concert Band  Division: Humanities
Description: MUS 219 is a continuation of rehearsal and performance as begun in MUS 218. This course will provide a survey of significant concert and symphonic band repertoire. Students will learn performance techniques on their instrument as are relevant to the concert band medium. Students will also learn the role that their instrument plays within the context of a concert band. Generally, two to four concerts will be performed each semester. Students must have a high school level competency on a wind or percussion instrument. An audition or personal interview with the conductor will be required for placement in the ensemble. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 218 or previous band experience

Course: MUS 220, NMC Jazz Band  Division: Humanities
Description: A course for the performer with a focus on big band jazz ensemble techniques and styles. A wide range of jazz styles are covered including swing, be-bop, ballads, rock/fusion and Latin. Some improvisation is briefly explored and always encouraged, although it is not the main focus of this course. A minimum of one concert will be performed each semester and all members are required to attend and participate in all scheduled performances. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 120 or MUS 121, previous band or jazz band experience, or instructor permission

Course: MUS 221, NMC Jazz Band  Division: Humanities
Description: A course for the performer with a focus on big band jazz ensemble techniques and styles. A wide range of jazz styles are covered including swing, be-bop, ballads, rock/fusion and Latin. Some improvisation is briefly explored and always encouraged, although it is not the main focus of this course. A minimum of one concert will be performed each semester and all members are required to attend and participate in all scheduled performances. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 220, previous band or jazz band experience, or instructor permission

Course: MUS 224, NMC Collegiate Singers  Division: Humanities
Description: Open to students who have completed MUS 125 or a year of a collegiate choral ensemble. The Collegiate Singers is designed for beginning and intermediate choral singers with specific instructional emphasis placed on singing and ensemble skills. This course will provide students with a broad base of skills that will be applicable to other choral ensembles in future collegiate years and beyond. The Collegiate Singers perform throughout the semester. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 225, NMC Collegiate Singers  Division: Humanities
Description: Open to students who have completed MUS 224 or a year of a collegiate choral ensemble. The Collegiate Singers is designed for beginning and intermediate choral singers with specific instructional emphasis placed on singing and ensemble skills. This course will provide students with a broad base of skills that will be applicable to other choral ensembles in future collegiate years and beyond. The Collegiate Singers perform throughout the semester. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 227, Traverse Symphony Orchestra  Division: Humanities
Description: Open to students by audition who have completed one year of orchestra or collegiate equivalent as a transfer student. The study and performance of orchestral literature, both standard and contemporary. Performance is required for credit. Course is designed to give students basic knowledge of music fundamentals, styles and performance history. The TSO is open by audition in the late summer and early fall of the year, and gives 8-10 concerts per year. Audition, rehearsal, and performance information is available through the music department. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MUS 128
Course: MUS 231 – 235 and 237 – 239, Ensembles in Applied Music  Division: Humanities
Description: A continuation of Ensembles, with emphasis on performance and repertoire. This course prepares students for public performance and develops abilities in ensemble techniques. Students study in small ensembles (duets, trios, quartets, quintets, and octets) under faculty direction. Students are expected to perform, at a minimum, for one Music Convocation each semester. Course number suffix A designates fall semester and suffix B designates spring semester. Permission of instructor is required. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 236A, Ensembles - Vocal Jazz II  Division: Humanities
Description: A small ensemble of men’s and women’s voices rehearses and performs vocal jazz works. Develop skills in vocal jazz styles, blending harmonies, microphone technique, and jazz theory. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 236B, Ensembles - Vocal Jazz II  Division: Humanities
Description: A small ensemble of men’s and women’s voices rehearses and performs vocal jazz works. Develop skills in vocal jazz styles, blending harmonies, microphone technique, and jazz theory. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: MUS 240 – 267, Applied Music – Private Lessons  Division: Humanities
Description: Private lessons for strings, brass, woodwinds, guitar, piano, voice, organ, and percussion are offered. Student may enroll for 1.0 credit (for a 30 minute, weekly lesson) or for 2.0 credits (for a 60 minute, weekly lesson). Music Majors should enroll for 2.0 credits. After registering for Applied Lessons, please contact Jeffrey Cobb, Director of Music Programs (jecobb@nmc.edu, or 995-1338), before or during the first week of classes for placement with an applied music instructor. A pre-arranged lesson time with the assigned instructor is arranged and studies/compositions, as appropriate, are prepared for continuing musical development. Students are expected to perform for, at a minimum, one Music Convocation each semester. Group 2 course.
Credit Hours: 1 – 2  Contact (Billing) Hours: 1 – 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

OUT – Outdoor Pursuits

Course: OUT 112, Winter Travel and Camping  Division: Physical Education
Description: This course introduces the three-season backcountry traveler to safe and enjoyable winter outings. The focus is on winter safety, travel techniques (primarily Nordic skiing), camping, menu planning, clothing and gear selection, navigation, and shelter building. Prerequisite(s): Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation courses in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: OUT 125, Backpacking I  Division: Physical Education
Description: The course is for novice backpackers. Information discussed and practiced includes basic backpacking skills, selecting of equipment, food planning and preparation, map and compass navigation, backcountry first aid and minimal impact camping. Prerequisite(s): Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation courses in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: OUT 126, Backpacking II  Division: Physical Education
Description: This course is for backpackers with prior experience. Its purpose is to broaden the student's knowledge of backpacking techniques with special attention given to lightweight equipment, menu planning, itinerary planning, map and compass navigation, site selection, and other minimal impact considerations. Prerequisite(s): OUT 125 or three-day backpacking experience. Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation course in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: OUT 125 or three-day backpacking experience

Course: OUT 130, Caving I  Division: Physical Education
Description: This course provides an introduction to the geology of cave formation and cave ecology. Additionally, by exploring non-commercial cave systems, students are introduced to the equipment, techniques, and safety systems associated with the sport of caving. Prerequisite(s): Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation course in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: OUT 131, Caving II  Division: Physical Education
Description: This course focuses on safe and appropriate techniques for exploring caves, with an emphasis on selecting and using equipment, as well as implementing climbing/rappelling safety systems for cave exploration. Prerequisite(s): OUT 130 or instructor permission. Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation course in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: OUT 130 or instructor permission

Course: OUT 132, Rock Climbing I  Division: Physical Education
Description: This course is a beginning rock climbing course to introduce students to climbing techniques, belaying, and safety practices related to class five climbing. Prerequisite(s): Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation course in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: OUT 132 or instructor permission

Course: OUT 133, Rock Climbing II  Division: Physical Education
Description: Students will learn anchor selection, active and passive gear placement, and advanced belaying techniques, with an introduction to lead climbing. Prerequisite(s): OUT 132 or instructor permission. Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation course in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: OUT 132 or instructor permission

Course: OUT 160, Canoeing I  Division: Physical Education
Description: Instruction in various techniques of canoeing are introduced in flat water (lake) and moving water (river). Two one-day trips are planned. Prerequisite(s): Students should be at a reasonably good physical fitness level and without current exercise-limiting injuries. This is a high-participation course in which most material is learned through experience on off-campus weekend field trips. Students with disabilities who need accommodations in order to complete these courses should contact the instructor prior to the first meeting. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: PE 101, Swing, Latin & Slow Dancing I  
Division: Physical Education  
Description: This course will introduce students to a fun form of exercise and recreation you can do for the rest of your life through swing and social dancing. Many styles of dancing will be covered including swing, jitterbug, tango, cha cha, waltz, slow dancing, two-step, Latin dancing, and many swing moves that can be incorporated into any dance situation. Please wear slippery soled shoes. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: PE 101A, Swing, Latin & Slow Dancing II  
Division: Physical Education  
Description: Take each style of dance learned at the beginning level to a more advanced level. Learn swing improvisation and aerals safety and spotting, advanced waltz and slow dancing techniques including lifts, more advanced moves in each of the Latin dances and a new dance, and we will explore the depths of Argentine Tango. Learn to keep partner dancing an integral part of your life and enjoy as a form of exercise. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: PE 101

Course: PE 102, Hip-Hop Dance I  
Division: Physical Education  
Description: Learn dance combinations used in the Hip-Hop dance style. Develops the strength, flexibility, rhythm, balance, and safe body mechanics to dance confidently in a social atmosphere to popular Hip-Hop music. A great way to exercise and have fun at the same time. Where clean, dry gym shoes. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: PE 102B, Hip-Hop Dance II  
Division: Physical Education  
Description: Learn advanced dance combinations building upon those used in Hip Hop Dance I. Further develops the strength, flexibility, rhythm, balance, and safe body mechanics to dance confidently in a social atmosphere to popular hip hop music. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: PE 102

Course: PE 105, Volleyball I  
Division: Physical Education  
Description: Introduction to volleyball with emphasis on developing individual ball-handling skills. Team play, basic strategy, and rules of play will also be covered. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: PE 106, Volleyball II  
Division: Physical Education  
Description: A continuation for students who already have good basic skills and understand the game. Emphasis is on team play, offensive and defensive alignments, and advanced volleyball skills. Group 2 course. Prerequisite(s): PE 105

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: PE 105

Course: PE 107, Basketball I  
Division: Physical Education  
Description: Introduction to the fundamental skills, rules, offensive and defensive team strategies of basketball. Designed for beginners through advanced levels. Drill practice and team play. Group 2 course.

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: None

Course: PE 108, Basketball II  
Division: Physical Education  
Description: A continuation for students who already have good basic skills and understand the game. Emphasis is on advanced offensive and defensive strategies as applied to a practical team play experience. Group 2 course. Prerequisite(s): PE 107

Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group Two Course  
Required Prerequisites: None  
Co-Requisites: None  
Recommended Prerequisites: PE 107
Course: PE 135, Weightlifting I  Division: Physical Education
Description: Designed for students interested in building and maintaining muscular strength, size, tone, and trimming.
Instruction in use of free weights as related to strength training and a total conditioning program. An individualized instructional approach will be used. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: PE 136A, Weightlifting II  Division: Physical Education
Description: Designed for students who wish to continue to build body size and muscular strength. Instruction will be given in the use of free weights as related to an advanced strength training and conditioning program. Group 2 course. Prerequisite(s): PE 135
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: PE 144, Tae Kwon Do (Karate) I  Division: Physical Education
Description: Introduction to the proper etiquette and philosophy of the Korean art of Tae Kwon Do (Karate). Training includes basic blocks, punches, kicks, stances, self-defense and the four-directional punch, the first pattern of Tae Kwon Do. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: PE 145, Tae Kwon Do (Karate) II  Division: Physical Education
Description: Refinement of basic skills and techniques of Tae Kwon Do. Training includes introduction of intermediate skills of blocking, kicking, punching, and Chon-ji, the second pattern of Tae Kwon Do. Group 2 course. Prerequisite: PE 144 or instructor permission.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PE 144 or instructor permission

Course: PE 146, Tae Kwon Do (Karate) III  Division: Physical Education
Description: Continuing refinement of basic and intermediate skills and techniques. Introduction to advanced foot techniques, semi- and free-sparing, and the methods of attack and defense against opponents. Training includes the patterns of Dan-Gun, Do-San, and Won-Hyo. Group 2 course. Prerequisite(s): PE 145 or instructor permission.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PE 145 or instructor permission

Course: PE 147, Tae Kwon Do (Karate) IV  Division: Physical Education
Description: Introduction to jumping kicks and refinement of basic, intermediate and semi-advanced skills and techniques. Introduction to jumping kicks and the patterns of Yul-Guk, Joong-Gun, Hwa-Rang, and Choong-Moo. Advanced flying kicks and additional patterns are introduced to those prepared to obtain Kick Belt ranks and to instruct lower rank students. Group 2 course. Prerequisite(s): PE 146 or instructor permission.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PE 146 or instructor permission

Course: PE 148, Kuntaw I  Division: Physical Education
Description: Introduction to the history and philosophy of the Filipino martial art form Maharlika Kuntaw. Kuntaw emphasizes flexibility and agility rather than power or strength and is based on the use of flowing circular strike/counter defense. Training includes use of arnis (sticks), basic strikes, blocks, kicks, anyos (forms), and self-defense. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: PE 149, Kuntaw II  Division: Physical Education
Description: This course provides the student with the continuation of beginning I. The student will learn the application of the six anyos (forms), stick drills, hand techniques, basic blocks, kicks, stalls, and traps. Group 2 course. Prerequisite(s): PE 148 or instructor permission.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PE 148 or instructor permission
Course: PE 150, Kuntaw III  Division: Physical Education
Description: Continuation of beginning course work with the addition of advanced blocks, parries, kicks, stalls, traps, take downs, stick/weapon drills, and self-defense. Training includes the five H-forms, the six stick anyos (forms), and the applications. Group 2 course. Prerequisite(s): PE 149
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PE 149

Course: PE 151, Kuntaw IV  Division: Physical Education
Description: Refinement of intermediate skills and techniques with additional advanced blocks, parries, traps, take downs, ground fighting, two-on-one fighting, and stick/weapon drills. Includes applications of advanced skills/techniques and the six saiawans and five combats (forms). Group 2 course. Prerequisite(s): PE 150
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PE 150

Course: PE 164, Judo I  Division: Physical Education
Description: This class will introduce the basics of the sport of Judo as well as Jujutsu based self-defense. Judo is recognized as one of the best forms of exercise. Actual combat (Randori) is a big part of Judo though safety is not compromised. Please wear loose, comfortable clothing and come to have fun. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: PE 169, Judo II  Division: Physical Education
Description: A continuation of Judo for intermediate and advanced levels. Students will continue to improve skills and abilities and advance through belt testing. Group 2 course. Prerequisite(s): PE 164
Credit Hours: 1  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PE 164

PHL - Philosophy

Course: PHL 101, Introduction to Philosophy  Division: Humanities
Description: This course is an introduction to some of the major areas, ideas, and thinkers of philosophy. Students will read from major philosophers in Western Philosophy, as well as from texts representing non-traditional or non-Western sources, such as Native American, Asian and feminist thought. Students will also be introduced to some of the main problems and concepts in areas such as Epistemology, Metaphysics, Ethics, and Aesthetics, as well as investigate other issues of movements, such as Existentialism or Feminism. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Completion of ENG 11/111 or placement into ENG 111

Course: PHL 105, Critical Thinking  Division: Humanities
Description: This course is about listening and reading and writing more effectively. Students learn ways to assess information and to form sound evaluative judgments about what is seen, heard, and read. Critical questions provide a structure for critical thinking that supports a continuing search for better opinions, decisions, or judgments. Exercises in understanding and composing logically sound arguments are emphasized as well as knowing what is fair and reasonable in the argument's structure. Examples are taken from professional situations such as law, medicine, and politics, as well as everyday life. Fallacies in rhetoric such as name calling and begging the question are identified and understood. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Completion of ENG 11/111 or placement into ENG 111

Course: PHL 121, Western Religions  Division: Humanities
Description: A study of historical development, main religious teachings leading personalities, ethical values and worship practices of the major religious traditions of the Western world: Judaism, Christianity, and Islam. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Completion of ENG 11/111 or placement into ENG 111
**Course: PHL 122, Eastern Religions**  **Division: Humanities**

**Description:** A study of historical development, main religious teachings, leading personalities, ethical values and worship practices of the major religious traditions of India, China, and Japan: Hinduism, Buddhism, Confucianism, Taoism. Group 1 course.

**Credit Hours:** 4  **Contact (Billing) Hours:** 4  **Group Attribute:** Group One Course

**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** Completion of ENG 11/111 or placement into ENG 111

**Course: PHL 201, Ethics**  **Division: Humanities**

**Description:** Ethics is a thoughtful analysis of a variety of value systems found in societies today. It explores the nature and meaning of good and evil and how these concepts relate to concepts of right and wrong. Through the use of critical judgment and philosophical thought, the course explores ethical theories from classical to modern times and includes consideration of ethics that are part of Eastern philosophical traditions as well as sources from Native American, African, African-American, Feminist and other non-traditional frameworks and paradigms. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group One Course

**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** Completion of ENG 11/111 or placement into ENG 111

**Course: PHL 202, Contemporary Ethical Dilemmas**  **Division: Humanities**

**Description:** This course examines the moral and ethical issues confronting modern societies locally and globally. Possible topics to be examined may include: the natural environment, the ethical treatment of animals, biomedical ethics; abortion and issues of human reproduction such as stem-cell research and cloning; business ethics; criminal justice and capital punishment; racism, sexism, and other forms of discrimination, welfare and economics distribution. This course relies on the discipline of philosophy for its methods of inquiry with critical thinking serving as a guiding concept. Traditional approaches to ethics will be incorporated throughout the course. Eastern/Asian and Native American philosophy may also be considered for contrast with standard western approaches to ethical and social issues. This course considers various topics and specific cases in order to provide an overall view of how ethical reasoning might be applied to current issues. Group 1 course.

**Credit Hours:** 3  **Contact (Billing) Hours:** 3  **Group Attribute:** Group One Course

**Required Prerequisites:** None  **Co-Requisites:** None  **Recommended Prerequisites:** Completion to ENG 11/111 or placement into ENG 111

**PHY – Physics**

**Course: PHY 105, Physics of the World Around Us**  **Division: Science & Math**

**Description:** This course is an introduction to the fundamental principles developed by mankind to describe the physical universe. In particular, the subjects of mechanics, heat, electricity and magnetism, waves, and light are surveyed. The development of conceptual understanding and critical-thinking skills is emphasized. Computers are used for data acquisition and analysis. Group 1 lab course.

**Credit Hours:** 4  **Contact (Billing) Hours:** 5  **Group Attribute:** Group One Course

**Required Prerequisites:** MTH 23  **Co-Requisites:** PHY 105L  **Recommended Prerequisites:** Students scoring below ENG 111 level on the placement test should plan on additional study time

**Course: PHY 105L, Physics/World Around Us Lab**  **Division: Science & Math**

**Description:** See PHY 105 for course description.

**Credit Hours:** 0  **Contact (Billing) Hours:** 0  **Group Attribute:** Group One Course

**Required Prerequisites:** None  **Co-Requisites:** PHY 105  **Recommended Prerequisites:** None

**Course: PHY 121, General Physics I**  **Division: Science & Math**

**Description:** This is the first in a two-semester sequential course intended to meet the needs of the prospective pre-medical, pre-dental, technical, architecture, or any other student who has a keen interest in examining some of the basic laws and applications of physics, using college algebra and trigonometry. This course deals with mechanics, sounds, thermodynamics and fluids. The lab portion is designed to illustrate and reinforce the basic concepts of physics while familiarizing the student with laboratory hardware and the experimental nature of physics. Group 1 lab course.

**Credit Hours:** 4  **Contact (Billing) Hours:** 6  **Group Attribute:** Group One Course

**Required Prerequisites:** MTH 122  **Co-Requisites:** PHY 121L  **Recommended Prerequisites:** None
Course: PHY 121L, General Physics I Lab  
Division: Science & Math  
Description: See PHY 121 for course description.  
Credit Hours: 0  
Contact (Billing) Hours: 0  
Group Attribute: Group One Course  
Required Prerequisites: None  
Co-Requisites: PHY 121  
Recommended Prerequisites: None

Course: PHY 122, General Physics II  
Division: Science & Math  
Description: A continuation of PHY 121. Topics include material properties, electric charges and fields, current, Ohm's Law, resistors, capacitors, RC circuits, DC and AC circuits including multi-branch circuits, magnetism, generation and transmission of electricity, household circuits, electrical safety, EM waves and optics, including the human eye. Group 1 lab course.  
Credit Hours: 4  
Contact (Billing) Hours: 6  
Group Attribute: Group One Course  
Required Prerequisites: PHY 121, PHY 121L  
Co-Requisites: PHY 122L  
Recommended Prerequisites: None

Course: PHY 122L, General Physics II Lab  
Division: Science & Math  
Description: See PHY 122 for course description.  
Credit Hours: 0  
Contact (Billing) Hours: 0  
Group Attribute: Group One Course  
Required Prerequisites: None  
Co-Requisites: PHY 122  
Recommended Prerequisites: None

Course: PHY 221, Problems & Princ.of Physics I  
Division: Science & Math  
Description: This course is the first semester of a two-semester course sequence primarily intended for those students preparing for engineering, science, or math careers. Topics include kinematics, Newton's Law, conservation of momentum, conservation of energy, rotational motion, oscillations, and fluids. The development of conceptual understanding and problem solving skills is emphasized. Computers are used for data acquisition and analysis. Group 1 lab course.  
Credit Hours: 4  
Contact (Billing) Hours: 5  
Group Attribute: Group One Course  
Required Prerequisites: MTH 141, may be taken concurrently  
Co-Requisites: PHY 221L, PHY 221R  
Recommended Prerequisites: ENG 111, may be taken concurrently

Course: PHY 221L, Prob./Prin. of Physics I Lab  
Division: Science & Math  
Description: See PHY 221 for course description.  
Credit Hours: 0  
Contact (Billing) Hours: 0  
Group Attribute: Group One Course  
Required Prerequisites: None  
Co-Requisites: PHY 221, PHY 221R  
Recommended Prerequisites: None

Course: PHY 221R, Prob.& Princ. of Physics I Rec  
Division: Science & Math  
Description: This course is a recitation to accompany lecture PHY 221. Group 1 course.  
Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group One Course  
Required Prerequisites: None  
Co-Requisites: PHY 221, PHY 221L  
Recommended Prerequisites: None

Course: PHY 222, Prob. & Princ. of Physics II  
Division: Science & Math  
Description: This course is a continuation of PHY 221. Topics include thermodynamics, waves, electricity, electric circuits, magnetism and optics. The laboratory covers the preceding topics in parallel with the lecture whenever possible. The development of conceptual understanding and problem solving skills is emphasized. Group 1 lab course.  
Credit Hours: 4  
Contact (Billing) Hours: 5  
Group Attribute: Group One Course  
Required Prerequisites: PHY 221, PHY 221L, PHY 221R  
Co-Requisites: PHY 222L, PHY 222R  
Recommended Prerequisites: None

Course: PHY 222L, Prob./ Prin. of Physics II Lab  
Division: Science & Math  
Description: See PHY 222/222 for course description.  
Credit Hours: 0  
Contact (Billing) Hours: 0  
Group Attribute: Group One Course  
Required Prerequisites: None  
Co-Requisites: PHY 222, PHY 222R  
Recommended Prerequisites: None

Course: PHY 222R, Prob. & Princ. of Physics II R  
Division: Science & Math  
Description: This course is a recitation class to accompany PHY 222. Group 1 course.  
Credit Hours: 1  
Contact (Billing) Hours: 2  
Group Attribute: Group One Course  
Required Prerequisites: None  
Co-Requisites: PHY 222, PHY 222L  
Recommended Prerequisites: None
PLS – Political Science

Course: PLS 101, Intro to American Politics  Division: Social Science
Description: This course is an introduction to the study of politics and political institutions in America. Emphasis is given to the constitutional framework, federalism, political participation, the electoral system, the presidency, Congress, the Supreme Court, and the bureaucracy. Civil rights and civil liberties are a theme throughout. This course includes an examination of the politics of race, and ethnic and cultural diversity in America. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: PLS 132, Comparative Politics  Division: Social Science
Description: This course provides a comparative analysis of political systems in developed and developing countries. Students learn about different forms of political organization as instituted and practiced in various countries. Students examine different methods of comparing political systems and learn to apply these methods in causal theories of political change. This course combines a focus on the basic structures of political systems with a thought-provoking analysis of the causes that give birth to those systems - thereby giving shape to the world in which we find ourselves today. Issues related to democracy, civil liberties, political rights, human rights, and economic development are analyzed throughout the course. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: PLS 211, International Relations  Division: Social Science
Description: Students analyze the nature of international relations in the world today. This course offers a broad overview of political and economic issues in the international arena. Course includes an analysis of American foreign policy since World War II. Other topics include such things as conflict in the Middle East, ethnic conflict and nationalism the world over, and the increasing importance of organizations such as the United Nations and the World Trade Organization. Students assess the dynamics of conflict and cooperation on the international scene. Course includes an examination of the basic analytical approaches to the study of international relations. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: PLS 222, Intro to Political Theory  Division: Social Science
Description: Introduction to Political Theory examines the foundational questions of normative political theory as developed by political philosophers of the ancient through contemporary periods. The course focuses on a wide array of political issues. Topics of consideration include: individual rights v. community rights; analyses of the equality of individuals; conceptions of justice put forth by various philosophers; and questions of what it means to achieve freedom in one's social and political life. Students can expect to read almost exclusively from primary sources. Examples of thinkers often studied in this course include Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, Kant, Marx, Mill, Berlin, and Rawls. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: PLS 233, U.S. Foreign Policy  Division: Social Science
Description: This course examines U.S. foreign policy, with a focus on the challenges the United States has faced since WWII. Students analyze the goals of policy-makers and the obstacles encountered as they attempt to achieve those goals. Issues for in-depth analysis include: cold war foreign policy; terrorism and fundamentalism; foreign policy responses to recent trends of economic globalization; WMD, arms control and non-proliferation issues; the U.S. invasions and occupations of Afghanistan and Iraq; a rising China and the challenges this presents to U.S. hegemony; and many others. This course uses political science models to analyze real world events in U.S. foreign policy. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PLS 101 or PLS 211, either may be taken concurrently. Recommended competencies: COMPASS placement into MTH 23 and ENG 11/111
PLU – Plumbing

Course: PLU 101, Introduction to Plumbing  Division: Construction Technology
Description: This course provides an introduction to plumbing. Through structured classroom and hands-on skill building, the student will learn the tools of the trade, plumbing safety, how to solder and braze copper tubing, piping skills and trade mathematics. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into MTH 23 and ENG 11/111 or co-enrollment in the recommended developmental Math and English course

Course: PLU 105, Plumbing Components  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn to work with copper pipe and fittings, cast-iron pipe and fittings, carbon steel pipe and fittings, corrugated stainless steel tubing, fixtures and faucets, drain waste and vent systems and water distribution systems. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: PLU 101  Co-Requisites: None  Recommended Prerequisites: None

Course: PLU 121, Commercial Plumbing  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn to read commercial drawings, hangers, supports, structural penetrations, and fire stopping, installation and testing DWV piping. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: PLU 105  Co-Requisites: None  Recommended Prerequisites: None

Course: PLU 125, Plumbing Installation  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn installation of roof, floor, and drain area, types of valves, installing and testing water supply piping, installing fixtures, valves, and faucets, basic electricity, installing water heaters, fuel gas systems and servicing plumbing fixtures. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: PLU 121  Co-Requisites: None  Recommended Prerequisites: None

Course: PLU 131, Advanced Plumbing Practices  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn to use applied math, size water supply piping, potable water treatment, backflow preventers and types of venting. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: PLU 125  Co-Requisites: None  Recommended Prerequisites: None

Course: PLU 135, Plumbing Systems and Pumps  Division: Construction Technology
Description: Through structured classroom and hands-on skill building, the student will learn sizing DWV and storm systems, sewage pumps and sump pumps, corrosive-resistant waste piping and compressed air. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: PLU 131  Co-Requisites: None  Recommended Prerequisites: None

PSY – Psychology

Course: PSY 100, Career Exploration & Planning  Division: Social Science
Description: Planning a career can be challenging because of the unknown. This course is designed to introduce the student to career and life planning theories and concepts and assist in applying these principles to their own lives. A variety of techniques will be used to accomplish this including activities on self-assessment of skills, values, interests, personality, and preferences; small group discussions; and written assignments. Development of goal-setting and decision-making skills will be included to enable the student to take charge of their career direction with known information. Group 2 course.
Credit Hours: 1  Contact (Billing) Hours: 1  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None
Course: PSY 101, Introduction to Psychology  Division: Social Science
Description: This course provides a broad, general introduction to psychology, its basic subject matter, and its approaches to gathering and evaluating evidence about the causes and correlates of behavior. It includes: a) awareness of major psychological approaches to the study of the behavior of organisms; b) knowledge of its important contributors; c) knowledge of research findings, and concepts; d) understanding of its methodology and limitations. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: PSY 211, Developmental Psychology  Division: Social Science
Description: This course presents human development from conception to death including the historical and anthropological bases for studying development. The course includes hereditary factors as well as physical, social, and emotional, linguistic, intellectual, and personality development. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: PSY 101  Co-Requisites: None  Recommended Prerequisites: None

Course: PSY 212, Psychology/Exceptional Child  Division: Social Science
Description: This course will provide an examination of the atypical child and his or her developmental needs, including the family. Areas covered will include characteristics, identification processes, methods for contributing to the child's healthy development and educational needs, community resources and referral procedures. The course will include the child with sensory, physical and speech impairments. The gifted child's development will also be explored. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: CD 202 or PSY 101  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: PSY 221, Psychology of Personality  Division: Social Science
Description: This course provides a presentation of the concepts, perspectives and terminology of major theorists in the field of personality psychology, as students explore the many psychological, physiological, social and cultural factors that affect personality development. Students are encouraged to evaluate personality theories in relation to current research and application. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: PSY 101  Co-Requisites: None  Recommended Prerequisites: None

Course: PSY 223, Intro to Social Psychology  Division: Social Science
Description: This course is an introduction to social psychology theory and research. It covers the individual in the social context including how we perceive, judge, and are influenced by others. Topics such as conformity, attraction, liking, prejudice, attitudes, aggression, helping behavior, and interpersonal power are covered from a social psychological perspective. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: PSY 101 or SOC 101  Co-Requisites: None  Recommended Prerequisites: None

Course: PSY 225, Human Sexuality  Division: Social Science
Description: Human Sexuality offers an introduction to all facets of the field, and involves discussions of theory, research, and practical information. The purpose of the course will be to develop a critical awareness of the dominant issues in the field and to refine the student's sense of sexual responsibility and integrity. This will be accomplished by exploring the biological, social, cultural, psychological, and personal elements of sexuality. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: PSY 101  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: PSY 231, Psychology of Adjustment  Division: Social Science
Description: First, this course will provide the student with a broad introduction to the psychology of adjustment which investigates the processes involved in the dynamic interactions of the individual with his or her environment. Second, this course is designed to present procedures by which the student can harness the principles of learning and rational self-counseling in order to achieve personal goals. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: SOC 101, Placement into ENG 111
Course: PSY 250, Abnormal Psychology  Division: Social Science
Description: This course is designed to give students a working vocabulary of the basic concepts of psychopathology, to help them critically evaluate theories and therapies in psychopathology, to develop an awareness of their own attitudes toward abnormal behavior, and acquire knowledge of the variety of techniques for overcoming interpersonal problems and living emotionally healthy lives. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: PSY 101  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

RAM – Robotics and Automation

Course: RAM 120, Robotics and Automation I  Division: Technical
Description: This course provides an introduction to sensors, actuators, robotics and automation. Students will extend concepts from prior electronics and programming courses to design and build robotic and automated systems. Students will complete a design project including design, prototype, test, and release phases. This course will also expose students to contemporary topics in robotics research, applications, and contests. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: CIT 110—may be taken concurrently; EET 103  Co-Requisites: None  Recommended Prerequisites: None

Course: RAM 150, Robotics and Automation II  Division: Technical
Description: This course is a continuation of Robotics and Automation I. Students will utilize more complex sensors, actuators, and interfaces to create automated solutions. Projects will feature distributed systems that communicate via the Internet, enabling remote sensing and control. Special Note: This course is a "Bring Your Own Device" (BYOD) course. Students must have a Windows Laptop. Software is provided. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: RAM 120  Co-Requisites: None  Recommended Prerequisites: None

SOC – Sociology

Course: SOC 101, Introduction to Sociology  Division: Social Science
Description: This course is an introduction to the study of human group behavior through social interaction with special emphasis on culture, the socialization process, social stratification, collective behavior, social institutions, and social change. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: SOC 201, Modern Social Problems  Division: Social Science
Description: This course presents an introductory sociological analysis of causes, changes in, and attempts to effectively treat some of the major problems in contemporary American society. These include: hunger, environmental problems, poverty, crime and delinquency, family problems, and homelessness. Community involvement projects are encouraged. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: SOC 211, Marriage and the Family  Division: Social Science
Description: This course covers topics such as traditional and non-traditional families, love and intimacy, sexuality, marriage, parenting, family problems and aging. The concept of healthy human relationships in a partnership, and how to build and maintain them, is stressed. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Placement into ENG 111

Course: SOC 220, Gender and Society  Division: Social Science
Description: This course examines gender as a system of stratification. It approaches issues of gender in society from both a social, structural, and a social psychological perspective. Issues related to gender inequality in selected institutions such as economy, family, media, education, and politics are studied. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: PSY 101 or SOC 101
Course: SOC 231, Deviance and Criminal Behavior  Division: Social Science
Description: This course examines the sociology of crime and criminal law; the social psychology of criminal behavior; the sociology of punishment and correction. Social, economic, political and biological factors are considered while exploring classical, contemporary, and critical thought. Prevention and intervention of criminal behavior are emphasized as well as punishment and correction. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: SOC 101

SPN – World Language – Spanish

Course: SPN 101, Elementary Spanish I  Division: Communications
Description: SPN 101 represents a comprehensive introduction to the Spanish language for the true beginner. Students will develop the ability to communicate in Spanish in everyday practical situations while acquiring some of the necessary skills for reading, writing, listening, and speaking. Cultural topics are integrated in each unit. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: SPN 102, Elementary Spanish II  Division: Communications
Description: SPN 102 is a continuation of SPN 101 and focuses on the expansion of the communications skills of reading, writing, listening, and speaking. Cultural topics are integrated in each unit. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: SPN 101 with 2.0 or higher, placement test or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: SPN 201, Intermediate Spanish I  Division: Communications
Description: SPN 201 is designed to further develop language proficiency in reading, writing, listening, and speaking. A deeper exploration of Hispanic culture is presented in this course, allowing students to transform themselves into truly active and proficient language users. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: SPN 102 with 2.0 or higher, placement test or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: SPN 202, Intermediate Spanish II  Division: Communications
Description: SPN 202 is a continuation of SPN 201 and focuses on the application of the communication skills of reading, writing, listening, and speaking within cultural contexts. Group 1 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group One Course
Required Prerequisites: SPN 201 with 2.0 or higher, placement test or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: SPN 227A, Spanish for Environmental Mgmt  Division: Communications
Description: SPN 227A focuses on global environmental issues as an entry point for further development of Spanish technical vocabulary, conversational skills and global competencies. Through an exploration of current freshwater issues in Spanish-speaking countries, and an experience studying overseas, students will address relevant issues concerning environmental resource management, and engage in community projects. Group 1 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group One Course
Required Prerequisites: 3-4 years of high school Spanish  Co-Requisites: None  Recommended Prerequisites: SPN 201
Course: SRG 101, Intro to Surgical Technology  Division: Health Occupations
Description: In this course students will learn the primary functions of the surgical technologist in multiple roles within the operating room environment. Points of focus will include effective communication, professional interactions with the patient and surgical team, proper personal protective equipment, introduction to asepsis, safety precautions, All-Hazard preparation, instrumentation, equipment, supplies, stapling devices, suture, and infection control and wound healing. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: BIO 227, HAH 101, HPD 110-all with 2.0 or higher; SRG 102 and SRG 103-can be taken concurrently  Co-Requisites: SRG 101L  Recommended Prerequisites: BIO 228

Course: SRG 101L, Intro to Surg Tech Lab  Division: Health Occupations
Description: In this course students will learn and practice in the laboratory environment the skills required to perform in the surgical setting. Emphasis will be placed on introductory skills, instrumentation, equipment and procedures relevant to general, gynecological, and genitourinary procedures. Students will be evaluated on their sterile and aseptic technique as well as case management skills. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: SRG 101  Recommended Prerequisites: None

Course: SRG 102, Surgical Microbiology  Division: Health Occupations
Description: Students in this course will learn about the cell, cell organelles and processes, and transport. This course will also cover varying types of organisms that cause infection, the infection process, and microbe identification. The body's natural defense system as well as common bacteria, viruses, and fungi that cause disease will be covered including the response. Group 2 course.
Credit Hours: 1.5  Contact (Billing) Hours: 1.5  Group Attribute: Group Two Course
Required Prerequisites: SRG 101 and SRG 103-can be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: SRG 103, Surgical Pharmacology  Division: Health Occupations
Description: In this course students will learn the pharmaceuticals used in surgical practice to include their actions, use, effects, contraindications and administration. The anesthesia process will be covered in defining the stages of general anesthesia as well as the different types of agents used. The course will cover the equipment, safe practices, sterile technique and terminology used in relation to pharmacology. Students will also cover practices relating to alternative therapies such as herbal medication, acupuncture, massage, and music therapy and their effect on the surgical patient. Group 2 course.
Credit Hours: 1.5  Contact (Billing) Hours: 1.5  Group Attribute: Group Two Course
Required Prerequisites: SRG 101 and SRG 102-can be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: SRG 121, Surgical Procedures I  Division: Health Occupations
Description: Students in this course will study the relevant surgical anatomy and physiology, pathophysiology, supplies, equipment, and instrumentation needed for a variety of procedures in the areas of general, obstetrics and gynecological, genitourinary, and orthopedic surgery. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: SRG 101, SRG 101L, SRG 102, SRG 103; SRG 122, SRG 123-can be taken concurrently  Co-Requisites: SRG 121L  Recommended Prerequisites: None

Course: SRG 121L, Surgical Procedures I Lab  Division: Health Occupations
Description: Students in this course will learn and practice in the laboratory environment the skills required to perform in the surgical setting. Emphasis will be placed on advanced skills concerning instrumentation, equipment and procedures relevant to orthopedic, ENT, plastic, reconstructive, minimally invasive, and vascular procedures. Students will also practice patient transport, transfer, urinary catheterization, skin prep, patient positioning and draping procedures. Students will be evaluated on their sterile technique and case management skills. This course will also include a clinical observation component of the relevant areas of the perioperative environment. Group 2 course.
Credit Hours: 3.5  Contact (Billing) Hours: 7  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: SRG 121  Recommended Prerequisites: None
Course: SRG 122, The Surgical Patient  Division: Health Occupations
Description: In this course students will define patient-centered care utilizing Maslow's hierarchy to determine the differing needs of the various patient populations that visit the surgical department. Important areas that will be described include appropriate communication, cultural and spiritual competence, and grief advocacy. This course will cover the aspects of the death in the operating room along with the organ transplant process. Students will also cover patient transport, transfer, urinary catheterization, skin prep, patient positioning and draping procedures. Group 2 course.
Credit Hours: .5  Contact (Billing) Hours: .5  Group Attribute: Group Two Course
Required Prerequisites: SRG 121, SRG 121L, SRG 123-may be taken concurrently  Co-Prerequisites: None  Recommended Prerequisites: None

Course: SRG 123, Biomed Sciences and MIS  Division: Health Occupations
Description: Students in this course are introduced to the basic concepts of physics to include the elements of motion, energy, light, sound and electricity and how they apply to surgical practice. Further study will include aspects of minimally invasive surgery including laparoscopy and robotic surgery. Students will also be introduced to the cases performed in interventional radiology and how they are integrated within surgical practice. The course will conclude with the study of diagnostic interventions integral in surgical practice as well as diagnosing pathologies preoperatively. Group 2 course.
Credit Hours: 1.5  Contact (Billing) Hours: 1.5  Group Attribute: Group Two Course
Required Prerequisites: SRG 121, SRG 121L, SRG 122-can be taken concurrently  Co-Prerequisites: None  Recommended Prerequisites: None

Course: SRG 201, Surgical Procedures II  Division: Health Occupations
Description: Students will study the relevant surgical anatomy and physiology, pathophysiology, supplies, equipment, and instrumentation needed for a variety of procedures. Surgical procedures covered will include the areas of otorhinolaryngology, neurology, and ophthalmic surgery. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: SRG 123; SRG 202 and SRG 204-both may be taken concurrently  Co-Prerequisites: None  Recommended Prerequisites: None

Course: SRG 202, Surg Procedures II Clinical  Division: Health Occupations
Description: In this course students will be in the clinical environment practicing to and performing essential skills required in the perioperative environment. While under the supervision of a surgical technologist or RN the student will observe, scrub, and assist on procedures as directed by the surgical team. Group 2 course.
Credit Hours: 5  Contact (Billing) Hours: 15  Group Attribute: Group Two Course
Required Prerequisites: SRG 201 and SRG 204-both can be taken concurrently  Co-Prerequisites: None  Recommended Prerequisites: None

Course: SRG 204, Professional Career Prep I  Division: Health Occupations
Description: In this course students will work with the Office of Career Services to complete a career portfolio and employment training. Major topics in this course include resume creation both written and online portfolios, interview preparation, job search strategies, and professional attire. Group 2 course.
Credit Hours: .5  Contact (Billing) Hours: .5  Group Attribute: Group Two Course
Required Prerequisites: SRG 201 and SRG 202-both can be taken concurrently  Co-Prerequisites: None  Recommended Prerequisites: None

Course: SRG 221, Surgical Procedures III  Division: Health Occupations
Description: Students in this course will study the relevant surgical anatomy and physiology, factors unique to surgical procedures, pathophysiology, supplies, equipment, and instrumentation needed for a variety of procedures. Surgical procedures covered include the disciplines of neurology, vascular and cardiothoracic surgical procedure categories. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: SRG 204; SRG 222 and SRG 224-can be taken concurrently  Co-Prerequisites: None  Recommended Prerequisites: None

Course: SRG 223, The Surgical Patient  Division: Health Occupations
Description: In this course students will define patient-centered care utilizing Maslow's hierarchy to determine the differing needs of the various patient populations that visit the surgical department. Important areas that will be described include appropriate communication, cultural and spiritual competence, and grief advocacy. This course will cover the aspects of the death in the operating room along with the organ transplant process. Students will also cover patient transport, transfer, urinary catheterization, skin prep, patient positioning and draping procedures. Group 2 course.
Credit Hours: .5  Contact (Billing) Hours: .5  Group Attribute: Group Two Course
Required Prerequisites: SRG 121, SRG 121L, SRG 123-may be taken concurrently  Co-Prerequisites: None  Recommended Prerequisites: None
Course: SRG 222, Surg Procedures III Clinical  Division: Health Occupations
Description: In this course students will continue working in the surgical environment under the direction of a surgical technologist or RN. The student will observe, scrub, and assist on more complex surgical cases as directed by the surgical team. The progression from student to entry level surgical technologist is the goal for the completion of this course along with the successful completion of the 120 scrubbed case requirements. Group 2 course.
Credit Hours: 6 Contact (Billing) Hours: 18 Group Attribute: Group Two Course
Required Prerequisites: SRG 221 and SRG 224—both may be taken concurrently  Co-Requires: None  Recommended
Prerequisites: None

Course: SRG 224, Professional Career Prep II  Division: Health Occupations
Description: In this course the students will focus on exam preparation for the certification exam given by the National Board of Surgical Technology and Surgical Assisting (NBSTSA) that will be taken electronically on campus the last week of the program. Testing strategies and studying techniques will be a large focus point as well as written and online practice exams. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: SRG 221 and SRG 222—both may be taken concurrently  Co-Requires: None  Recommended
Prerequisites: None

SWK – Social Work

Course: SWK 121, Introduction to Social Work  Division: Social Science
Description: In this class we will gain basic knowledge about the varying and diverse areas of social work including the health care systems, rural and urban settings, criminal justice systems, systems that work with the elderly, various private and public agencies and schools. We will explore and build an understanding of client populations who may be in need of social work services. In addition, we will assess our own experiences, interests and knowledge that may guide us in the field of social work. Group 2 course.
Credit Hours: 2 Contact (Billing) Hours: 2 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requires: SWK 170  Recommended Prerequisites: ENG 11/111 or ENG 111

Course: SWK 170, Service Internship Orientation  Division: Social Science
Description: Orientation and preparation for introductory internship experiences in social work areas. For example, introduction to use of supervision, supervisory evaluation, self-evaluation and varying agency structures and functions. Opportunities for internships will also be introduced. This class is done in class and seminar format. Group 2 course.
Credit Hours: 1 Contact (Billing) Hours: 1 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requires: SWK 121  Recommended Prerequisites: ENG 11/111 or ENG 111

Course: SWK 211, Social Interviewing Skills  Division: Social Science
Description: Introduction to types, purposes and stages of interviewing. Basis empathy skill development will be for observation, listening, non-verbal communications, rapport building, information giving and information gathering. Beginning training in recording and documentation. Emphases will be on self-monitoring and working with culturally diverse, oppressed or psychologically maladaptive clients. In addition, we will explore building relationships with clients that is focused on the strengths of the client. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requires: None  Recommended Prerequisites: ENG 11/111 or ENG 111, SWK 121, SWK 170

Course: SWK 221, Introduction to Social Welfare  Division: Social Science
Description: This course explores the historical development of social welfare in the United States, how it has defined social services and implications of they have had on society today. It also reviews modern social welfare systems and the existing attitudes, philosophies and the implications of economic, political and cultural conditions. Varying major theories of behavior are also explored as they relate to social work and the clients in need of services. The course also explores the importance of social workers in social action through understanding the different political perspectives influencing the formation of welfare policy. Group 2 course.
Credit Hours: 3 Contact (Billing) Hours: 3 Group Attribute: Group Two Course
Required Prerequisites: SWK 121, SWK 170  Co-Requires: None  Recommended Prerequisites: PLS 101, ENG 11/111 or higher
Course: SWK 290, Social Work Internship  Division: Social Science
Description: This course helps to prepare students for the generalist practice in the field of social work. This is a field instruction course that students will engage in direct practice of social work education. Students will complete 120 hours in a human service agency. This placement will provide an opportunity to observe social workers while they work, as well as assisting in general service delivery under close supervision. Students must complete the 120 hours in one semester. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: SWK 121, SWK 170  Co-Requisites: None  Recommended Prerequisites: SWK 211

VCA – Visual Communications/Art

Course: VCA 100, Materials and Techniques  Division: Humanities
Description: This course introduces students to commercial drawing techniques with an emphasis on perspective, using pencil, pen & ink, marker, water color and gouache when illustrating a variety of different products and illustration formats. Creative media experimentation is encouraged through the assignments. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: ART 121

Course: VCA 125, Typography I  Division: Humanities
Description: This course serves as an introduction to typographic history, letterforms, mechanics, terminology and usage. Students will complete projects that lead them to an understanding of the fundamental and technical aspects of this abstract art including font selection and typesetting. As part of this course students will also learn the basics of Adobe InDesign, desktop publishing software used to create single and multi-page files, format text using style sheets, manage color, import and create graphics and tables and prepare files for print production. The Adobe Certified Associate Exam for InDesign is included in the cost for this course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: VCA 150  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: Intermediate keyboarding skills, intermediate to advanced understanding of vector drawing, desktop publishing software and the Macintosh system

Course: VCA 126, Typography II  Division: Humanities
Description: This class serves as continuation to typography history, trends, display faces, and grids with an emphasis on book typography, binding, and structuring methods. Students will complete projects that lead them to an understanding of intermediate typography, current typographic trends and comparative analysis of typefaces that relate to the field of Visual Communications as well as printed and electronic media. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: VCA 125  Co-Requisites: None  Recommended Prerequisites: None

Course: VCA 127, Digital Imaging  Division: Humanities
Description: Students will learn Adobe Photoshop, a bitmap manipulation tool used to create images for both print and the web. Students will learn how to incorporate color, use layers, create special effects, use filters, and use a variety of selection techniques for proper image editing. Students will also learn the basics of using a digital camera and scanner as well as color management, how to restore damaged images, automate tasks, and how to prepare files for print. The Adobe Certified Associate Exam for Photoshop is included in the cost for this course. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: VCA 146, Interactive Animation  Division: Humanities
Description: This course's focus will be on creation of animation using both traditional methods and Adobe Animate software. Students will learn the basics of animation and storytelling, file management and organization, as well as interactive navigation. Students will also learn how to incorporate sound and video in projects and learn how to prepare their files for use on web sites. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: VCA 127, VCA 150  Co-Requisites: None  Recommended Prerequisites: VCA 125
Course: VCA 147, Web Design I  Division: Humanities  
Description: This course will focus on creative website design including site planning, interactive navigation, information design theory, file management, and user experience (UX). Students will learn industry best practices and develop a basic process by which any web design challenge should be approached. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course  
Required Prerequisites: VCA 127, VCA 150  Co-Requisites: None  Recommended Prerequisites: VCA 125

Course: VCA 150, Digital Graphics Design I  Division: Humanities  
Description: This course covers the basics of using Adobe Illustrator to create vector objects and layouts for print and interactive environments. Students will learn how to create and manipulate shapes, work with type, color, gradients, fills and strokes. Students will learn how to work with spot and process colors, create die lines for packaging and other basic design principles. Students will also learn to prep files for print and choose the correct color space for various applications. The Adobe Certified Associate Exam for Illustrator is included in the cost for this course. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course  
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: CIT 100, Recommended competencies: Basic keyboarding skills highly recommended. Use of the Macintosh or Windows operating system highly recommended

Course: VCA 200, Visual Communications II  Division: Humanities  
Description: Through this course you will gain insight and an introduction to the theory of graphic design through practice in researching, brainstorming, creative problem solving, comping, design brief writing and production of print and digitally driven graphics projects like: logo marks, identity developments, posters, collateral and greeting cards. Students embrace print and digital pre-production techniques and receiving constructive criticism of work and practice. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course  
Required Prerequisites: VCA 125  Co-Requisites: VCA 220  Recommended Prerequisites: ENG 112

Course: VCA 220, Visual Communications III  Division: Humanities  
Description: Through this course, you will gain insight and introduction to the theory of advertising design and art direction through practice in researching, brainstorming, marketing, creative problem solving, copywriting and editorial planning of print and digital advertising, advertising campaigns, television storyboards and product branding. Traditional and digital best practices will be explored as students work on campaign voice and receiving/giving constructive criticism using industry terminology. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course  
Required Prerequisites: VCA 125  Co-Requisites: VCA 200  Recommended Prerequisites: ENG 112

Course: VCA 225, Visual Communications Studio  Division: Humanities  
Description: By the end of this course, students will have participated in two hands-on "real world" design projects in which you will act as copywriter, art director, designer, filmmaker, photographer or illustrator. Service learning projects are for various regional not-for-profit clients. You will learn all aspects of pre-press work, digital workflow, production, and printing via field trips to area service providers and professionals while also learning to work with clients and the self-driven responsibilities of teamwork. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course  
Required Prerequisites: VCA 200 and VCA 220 or instructor permission  Co-Requisites: None  Recommended Prerequisites: None

Course: VCA 230, Visual Communications V  Division: Humanities  
Description: In this course you will excel in setting occupational/educational aspirations and offering/receiving constructive criticism of your work. You will design and produce a body of work for your portfolio, tailored to your individual goals, be it in Illustration, Graphic Design, Motion Graphics or Art Direction. Progressive Visual Communications theory and practice will also be studied through projects in packaging design, point-of-purchase displays, info-graphics, mobile app development and more. Group 2 course.  
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course  
Required Prerequisites: VCA 200, VCA 220 or instructor permission  Co-Requisites: None  Recommended Prerequisites: None
Course: VCA 235, Visual Comm Portfolio  Division: Humanities
Description: Students explore various methods of preparing professional portfolios, as well as the packaging and marketing of their portfolio works in preparation for further education and/or job interviews related to their career goals in visual communications. Along with the portfolio, each student prepares a resume, digital portfolio, and considers other self-promotional pieces to complete his/her portfolio package. The emphasis of this course is that each student compiles a professional looking and complete portfolio package based on his/her occupational and educational goals. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: VCA 200, VCA 220  Co-Requisites: None  Recommended Prerequisites: None

Course: VCA 246, Interactive Animation II  Division: Humanities
Description: This course will focus on the advanced exploration of interactive navigation, animation and storytelling that is created for and exists on the web. Advanced Design theory, greater interactivity, file architecture, web loading, hosting and uploading for Flash and more exposure to Motion software will emphasize creative and narrative language. Students should be self-motivated, this advanced section involves independent projects. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: VCA 146  Co-Requisites: None  Recommended Prerequisites: None

Course: VCA 247, Web Design II  Division: Humanities
Description: This course will focus on advanced creative website development and design including site planning, interactive navigation, information design theory, file management, and user experience (UX). Students will explore app design and real-world web projects to deepen their understanding of interactive information design. Students should be self motivated since this advanced course involves independent projects. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: VCA 147  Co-Requisites: None  Recommended Prerequisites: None

Course: VCA 250, Time Based Media  Division: Humanities
Description: A multisensory, theory driven exposure and exploration of time-based visual communication environments. The role of typography, image, sound, space, luminosity, and narrative are assessed and used to create sequences of film and moving image. Students are exposed to tools, theories, aesthetics and techniques used in time-based medium using Final Cut Pro HD, Motion, LiveType, and Soundtrack. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: VCA 147  Co-Requisites: None  Recommended Prerequisites: None

Course: VCA 252, Time Based Media II  Division: Humanities
Description: A multisensory, theory driven continuation and exploration of time-based visual communication environments. The role of typography, image, sound, space, luminosity, and narrative are assessed and used to create sequences of moving image. Students are exposed to tools, theories, aesthetics and techniques used in the time-based medium in a more advanced level using Final Cut Pro HD and Motion. Students should be self-motivated, this advanced section involves independent projects. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: VCA 125

Course: VCA 290, Visual Comm Internship  Division: Humanities
Description: This course is the capstone for the AAS degree in Creative Management Art Direction. This internship provides on-the-job experience for the student who wishes to pursue a career in visual communications. Customized to meet the learning needs of the student and the job requirements of the sponsoring firms, students spend 180 hours in paid or non-paid, supervised on-the-job training experiences. In addition students participate in bi-weekly reports and weekly online methodology discussion boards with the instructor/peers. Students must apply one month prior to the semester they wish to complete class. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: Students must have completed all VCA courses with a minimum 2.5 GPA and departmental approval  Co-Requisites: None  Recommended Prerequisites: The student should possess good written, graphic and oral communication skills, and have a portfolio of work/resume to show employers
WPT – Welding Process Technology

Course: WPT 110, Oxy-Fuel Process  Division: Technical
Description: This course is designed for Welding students pursuing job skills or transferring into a Welding degree program. Topics include oxyacetylene welding in the flat, horizontal, and vertical positions; oxyacetylene cutting, and oxyacetylene brazing. Students learn safety and theory as well as develop their proficiency in these operations. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 120, GTAW (TIG) Welding I  Division: Technical
Description: This course provides the student with the opportunity to learn and apply the theory of basic Gas Tungsten Arc Welding (GTAW) techniques on ferrous and non-ferrous metals in the flat and horizontal positions. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 100 OR WPT 110  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 121, GTAW (TIG) Welding II  Division: Technical
Description: This course provides students the opportunity to learn and apply welding techniques using the Gas Tungsten Arc Welding (GTAW) process on ferrous and non-ferrous metals on advanced joint designs and in the vertical position. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 120  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 130, SMAW (ARC) Welding I  Division: Technical
Description: This course is designed for students pursuing job skills or transfer into a Welding degree program. Students learn theory and application of safe Shielded Metal Arc Welding (SMAW) in the flat and horizontal positions. They develop skills with "fast freeze" and "low hydrogen" type electrodes. Topics include welding terminology, electrical theory as it relates to SMAW, weld defects and quality, and the American Welding Society SMAW filter material numbering system. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 131, SMAW (ARC) Welding II  Division: Technical
Description: This course provides the student with advanced theory and application of Shielded Metal Arc Welding (SMAW) techniques in the flat, horizontal and vertical positions using "fast freeze" and "low hydrogen" electrodes. Topics include weld quality, inspection, power sources, and trouble shooting. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: WPT 130  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 140, GMAW (MIG) Welding I  Division: Technical
Description: This course provides the student an opportunity to learn the theory and application of basic Gas Metal Arc Welding (GMAW) techniques on ferrous metals. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 141, GMAW (MIG) Welding II  Division: Technical
Description: This course provides students the opportunity to learn and apply safe welding techniques using the Gas Metal Arc Welding (GMAW) process on ferrous and non-ferrous metals on advanced joint designs and welding positions. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 140  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 142, Flux Cored Arc Welding  Division: Technical
Description: This course provides students the opportunity to learn and apply safe welding techniques using the Flux Cored Arc Welding (FCAW) process. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 140  Co-Requisites: None  Recommended Prerequisites: None
Course: WPT 160, Weld. Qualification Prep-SMAW  Division: Technical
Description: This course provides experienced welders/students the opportunity to take the AWS welder qualification tests in Shielded Metal Arc Welding (SMAW). Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 131  Co-Requisites: None  Recommended Prerequisites: None

Description: This course provides experienced welders/students the opportunity to take the AWS welder qualification tests in Gas Metal Arc Welding (GMAW). Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 141  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 160B, Weld. Qualification Prep-GTAW  Division: Technical
Description: This course provides experienced welders/students the opportunity to take the AWS welder qualification tests in Gas Tungsten Arc Welding (GTAW). Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 121  Co-Requisites: None  Recommended Prerequisites: None

Description: This course provides experienced welders/students the opportunity to take the AWS welder qualification tests in Flux Cored Arc Welding (FCAW). Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: WPT 142  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 160D, Weld. Qualification Prep-Other  Division: Technical
Description: This course provides experienced welders/students the opportunity to take the AWS welder qualification tests (other than GTAW, GMAW, SMAW, or FCAW) in specified processes on specified materials in specified positions. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 210, Welding Fabrication and Repair  Division: Technical
Description: This course provides students an opportunity to apply the process specific welding skills that they have previously mastered to complete fabrication and repairs projects. In addition to welding, students will learn shop metal identification, how to setup and operate shop metal prep and fabricating equipment as well as plan, sketch, order and prepare for a variety of projects. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 5  Group Attribute: Group Two Course
Required Prerequisites: WPT 121 or WPT 131 or WPT 141 or WPT 142 with a 2.0 or higher  Co-Requisites: None  Recommended Prerequisites: None

Course: WPT 260, Intro to Welding Automation  Division: Technical
Description: This course provides students an opportunity to learn the theory behind common forms of automation utilized throughout the welding industry. Lab assignments will focus on equipment set-up and operations along with analysis of results. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: DD 101, MFG 111, WPT 142  Co-Requisites: None  Recommended Prerequisites: ENG 111

Course: WPT 290, Welding Internship  Division: Technical
Description: The purpose of the internship is to provide on-the-job training for the student who wishes to pursue a career in a technical field of study. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10-15 hours per week in this paid, supervised on-the-job training experience. In addition to the required 50 hours per credit at a work site, students participate in semi-monthly seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: 20 credits of program specific courses with a GPA of 3.0 or higher  Co-Requisites: None  Recommended Prerequisites: None
WSI – Water Studies

Course: WSI 105, Intro to Freshwater Studies   Division: Water Studies Institute
Description: This course is designed to provide an exploration to the field of water studies, with specific focus on freshwater. The students will discuss the impact of water related challenges and opportunities in the context of the great lakes of the world. Focus will be given to the new and emerging career and educational pathways associated with water resources and their management. In addition to regular class lectures, invited experts from business, education and community organizations will introduce relevant topics of local and global significance including policy, law, sustainable development, history, engineering, health, and commerce. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: MTH 23, ENG 111 - may be taken concurrently

Course: WSI 200, GL Research Technologies   Division: Water Studies Institute
Description: Advancements in Great Lakes research and monitoring techniques allow for an increased ability to access and assess remote locations through the use of enabling technologies and platforms including: Research Vessels, Remotely Operated Vehicles (ROV), SONAR systems (single beam, multibeam, scanning) and oceanographic buoy systems. Focus will be directed at understanding the basics of how each component is used while gaining firsthand experience operating systems and collecting information. Field activities will take place in local water bodies, Grand Traverse Bay and onboard the R/V Northwestern. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Recommended competencies: Ability to work/learn aboard R/V Northwestern and in the field. Completion of MTH 111 and ENG 111 or appropriate placement scores

Course: WSI 210, Underwater Acoustics and Sonar   Division: Water Studies Institute
Description: This course provides a foundation for the use of acoustics in the marine environment while focusing on best practices for underwater search, survey and visualization programs. Multiple sonar systems are presented and are representative of current industry equipment, operations and practices. Emphasis is placed on field applications where sonar platform, water depth and temperature, target range and size, acoustic frequency and object reflectivity/absorption have an effect on target detection, resolution and data accuracy. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: MTH 111  Co-Requisites: None  Recommended Prerequisites: PHY 105; placement into ENG 111

Course: WSI 211, Sonar for Search & Recovery   Division: Water Studies Institute
Description: This course provides training in the best use practices of multiple acoustic platforms for use in search and recovery operations typical to law enforcement, homeland security and first responders from multiple agencies. Group 2 course.
Credit Hours: 1.5  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: Prior use of sonar equipment in search and recovery applications.

Course: WSI 215, Marine GIS & Data Processing   Division: Water Studies Institute
Description: This course builds upon the basics of GIS taught in ENV/GEO 115 - Introduction to GIS, with a focus on basic spatial analysis techniques using standard and maritime/marine datasets. More advanced cartographic methods and spatial data management techniques are introduced using ArcGIS Desktop, Hypack, and other computer tools. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: ENV 115 or GEO 115 with grade of 2.0 or higher  Co-Requisites: None  Recommended Prerequisites: None

Course: WSI 230, Water Policy & Sustainability   Division: Water Studies Institute
Description: This course is designed to provide a basic understanding of the fundamental principles of water law and policy and human relationships, use, threats, and conflicts over water and aquatic resources. The course emphasizes a new integrative approach to water issues based on the nexus of the water commons to health, food, quality of life, energy, climate change, ecosystem, and economy. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: ENG 111 and MTH 23, both may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: PLS 101, WSI 105
Course: WSI 240, ROV Systems and Operations  Division: Water Studies Institute
Description: This course introduces the technology of remotely operated vehicles (ROV) as a multicomponent system used for subsea activities including scientific study and research, subsea exploration and industrial applications. International Marine Contractors Association (IMCA) guidelines will be used for training. Students will gain firsthand experience operating the ROV for the purpose of collecting information from docks, piers, and research vessels. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: EET 103, MTH 111  Co-Requisites: None  Recommended Prerequisites: WSI 200, placement into ENG 111

Course: WSI 290, Freshwater Studies Internship  Division: Water Studies Institute
Description: The internship in Freshwater Studies is a field experience for students interested in developing competencies to address significant water-related issues impacting our region and the world. Students engage in research activities with local and global community partners to collaborate in the implementation of best water management practices. The program is customized according to students' background and specific career goals. Activities may include monitoring water quality, identifying invasive species distribution, digital mapping and hydrographic surveying. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: None  Co-Requisites: None  Recommended Prerequisites: None

Course: WSI 300, Sonar Systems and Operations  Division: Water Studies Institute
Description: This course provides a foundation in the use of electronic sensors for remote observations. The focus will be on applications for marine and near-shore environments, though any sensor system/platform may be discussed. Basic sensor science will be applied to the study of remote sensing instruments, including marine acoustics, terrestrial acoustics, visible, laser/LIDAR, multispectral, and hyperspectral. Sensor development and evolution will be studied, as well as related current events including instruments used in deep-sea, commercial, military, and space science industries. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: PHY 121  Co-Requisites: None  Recommended Prerequisites: WSI 200, placement into ENG 111

Course: WSI 310, Sonar Systems and Operations  Division: Water Studies Institute
Description: This course provides advanced training for the use of sonar systems in the subsea environment. Students will utilize multiple sonar systems for the purpose of profiling and imaging nearshore infrastructure; positioning and navigation of subsurface equipment; and interpreting collected sonar data for use in marine subsurface applications. Specific sonar systems utilized will include side scan sonar, scanning sonar and USBL systems. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 6  Group Attribute: Group Two Course
Required Prerequisites: WSI 200, WSI 210  Co-Requisites: None  Recommended Prerequisites: None

Course: WSI 315, Advanced Marine Survey & Data  Division: Water Studies Institute
Description: This course provides a foundation in the coordination of maritime surveys from a pre-deployment standpoint. Students will be expected to have a strong understanding of the remote sensing science including capabilities and limitations of the sensor systems used. A major focus of the course will be to develop student skillsets for processing and merging marine and terrestrial datasets from a wide range of sources and systems. Significant time will be devoted to proper manipulation of data using commercial and freely-available tools. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: PHY 121, WSI 215  Co-Requisites: None  Recommended Prerequisites: WSI 300

Course: WSI 390, Marine Tech Internship  Division: Water Studies Institute
Description: The purpose of the internship is to provide on-the-job training for the student who wishes to pursue a career in a technical field of study. The internship will be customized to meet the learning needs of the student and the job requirements of the sponsoring firm. Students spend 10-15 hours per week in this paid, supervised on-the-job training experience. In addition to the required 50 hours per credit in a work site, students participate in semi-monthly seminars. Students must apply one month prior to the semester in which they will complete the internship. Group 2 course.
Credit Hours: 2  Contact (Billing) Hours: 2  Group Attribute: Group Two Course
Required Prerequisites: 60 credits of program specific courses with a GPA of 2.0 or higher  Co-Requisites: None  Recommended Prerequisites: WSI 200
Course: WSI 400, Marine Technology Capstone  Division: Water Studies Institute
Description: This course requires the synthesis and integration of knowledge and skills acquired across the Marine Technology curriculum for completion of a team-oriented project and will require significant written, oral and visual deliverables including a final presentation. These field-based projects will include a comprehensive approach to mission planning, technical equipment competency, budgeting, data collection/processing and dissemination to an audience. Group 2 course.
Credit Hours: 4  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: WSI 200, WSI 210, WSI 215, WSI 240, WSI 300, WSI 310, WSI 315; WSI 300 and WSI 315 may be taken concurrently  Co-Requisites: None  Recommended Prerequisites: None

Course: WSI 405, Marine Industry  Division: Water Studies Institute
Description: This course focuses on contemporary issues and current events in the marine industry. It is intended to explore the global marine technology market while providing industry perspective from the marine sector including consequences of pollution, safety regulations, policy development, technology advances, and economics. Students will evaluate trends and conditions expected to influence the industry over the next five years. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 3  Group Attribute: Group Two Course
Required Prerequisites: Completion of 60 credit hours within major, Must include WSI 200, WSI 210, WSI 240  Co-Requisites: None  Recommended Prerequisites: None

Course: WSI 433, Marine Project Management  Division: Water Studies Institute
Description: This course covers the practice of project management, design and development solutions specific to underwater marine equipment (ROV/AUV). Course emphasis will be on project development, teamwork, engineering principles and communication. The curriculum aligns with the PMI "body of knowledge" required to become a Certified Associate in Project Management (CAPM). Students will work in teams to design and construct a project based upon student interest. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: RAM 120, WSI 200, WSI 210, WSI 215, WSI 240  Co-Requisites: None  Recommended Prerequisites: EET 304, MFG 304, WSI 300

Course: WSI 440, AUV Systems & Operations  Division: Water Studies Institute
Description: This course introduces the technology of autonomous underwater vehicles (AUV) for use in the marine environment. Students will learn mission planning, vehicle mobilization, launch and recovery techniques, remote guidance, and basic troubleshooting of an AUV system used for subsea activities including scientific study and research, subsea exploration and industrial applications. Students will gain firsthand experience operation the AUV in the Great Lakes. Group 2 course.
Credit Hours: 3  Contact (Billing) Hours: 4  Group Attribute: Group Two Course
Required Prerequisites: WSI 200, WSI 210, WSI 215, WSI 240, and instructor permission  Co-Requisites: None  Recommended Prerequisites: None