Schoolcraft College

2017-18 Compiled Catalog PDF

Degree Requirements

Associate in Applied Science (AAS)
Associate in Arts (AA)
Associate in Business Administration (ABA)
Associate in Engineering (AE)
Associate in Fine Arts (AFA)
Associate in General Studies (AGS)
Associate in Science (AS)
Bachelor of Science in Culinary and Dietary Operations Management (BS)
General Education/Core Abilities/Michigan Transfer Agreement

Program Descriptions & Sample Plans of Study

Skills Certificates
Certificates
Associate and Bachelor's Degrees
Post-Associate Certificates

Course Descriptions

Accreditations

Schoolcraft College provides this PDF document for information purposes only. Its contents do not constitute a contract between this institution and prospective or enrolled students. The information contained in this document reflects the current curricula of the college as of 8/1/17, which is maintained and updated as needed digitally at www.schoolcraft.edu/academics. This information is subject to change at any time by action of the Board of Trustees or the administration.

Visit www.schoolcraft.edu/academics for updates and the most current information.

All courses (and programs) are not offered each semester/term. Students should work with an academic advisor regularly to develop an educational plan of study and schedule of classes that will best meet their needs and education goals.

Questions? Contact the Answer Center 734-462-4426 or answers@schoolcraft.edu

Degree Requirements

AAS - ASSOCIATE IN APPLIED SCIENCE Program Code: AAS.00042

(Another program code may be specified for specific programs, such as those used for Accounting through Welding.)

By obtaining an associate in applied science (AAS) degree, students will be prepared to seek employment in their chosen career field. To explore transferability options, it is recommended that students meet with a counselor or academic advisor.

Degree Focus: Occupational (Transfer possible through articulation). Completion of a specified set of occupational courses that satisfy the development of occupational skills, as well as a broad distribution of liberal arts courses used to achieve a balance between job skills and general education.

English Communication: Minimum 6 credit hours. Completion of a minimum of two English communication courses within a set of courses.

ENG 101M and ENG 102M* or ENG 102M and ENG 221M* or ENG 102M and COMA 103M+* or ENG 221M and COMA 103M+*

OR

ENG 100 and ENG 106 or ENG 100 and ENG 116 or ENG 101M and ENG 106 or ENG 101M and ENG 107 or ENG 101M and ENG 116

Humanities+: Minimum 1 credit hour. Completion of a minimum of one humanities course.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

Mathematics: Minimum 3 credit hours. Completion of a minimum of one mathematics course.

Natural Sciences: Minimum 3 credit hours. Completion of a minimum of one natural science course.

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

Social Sciences+: Minimum 3 credit hours. Completion of a minimum of one social science course.

Anthropology, Economics, Geography+, History+, Political Science, Psychology or Sociology

Major Area of Study: Minimum 16-44 credit hours in a major concentration area which are identified and listed in the program requirements which are specific or supportive of the occupational goals.

General Electives: Completion of a range of occupational or liberal arts courses that support the development of occupational skills or Schoolcraft College (SC) General Education requirements

Course Level: All courses that apply to this degree must be at the 100-through 400-level with a minimum grade point average (GPA) of 2.0.

Credit Requirement: Minimum 60 credit hours.

Institutional Requirements: Completion of all Schoolcraft College Core Abilities and a minimum of 16 credit hours associate-level Schoolcraft College General Education requirements in English, humanities, mathematics, natural sciences, and social sciences. The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College General Education requirements.

PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution area. Additionally, students may not use COMA 103M+* to satisfy both the humanities and English communications distribution area. Only certain Geography courses can be used for a natural science or social science course.

Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120. Courses may or may not transfer to another institution and are written in bold font. No SC occupational course may be used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG 205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscrip tM -e.g.,PSYCH 153M –see paragraph 2c.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153M, BIOL 101ML, ECON 201M, ART 120M, MATH 111M. These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA-identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscriptM -e.g., MATH 111M. Information about the MTA requirements may be found at https://www.macrao.org/ .

Content Updated: 9- 6-16

ASSOCIATE IN ARTS – AA Program Code: AA.00042

The associate in arts (AA) degree is for students who plan to transfer to a four-year college or university. The associate in arts degree is appropriate for most transfer programs leading to a baccalaureate degree. Schoolcraft students may complete the degree by following the requirements specified by the transfer institution and Schoolcraft College (SC).

Degree Focus: Transfer. Completion of a broad distribution of liberal arts courses in the English, humanities, mathematics, natural sciences, and social sciences distribution areas that may be used to meet transfer requirements toward a baccalaureate degree. Some liberal arts courses cannot be used to satisfy the Michigan Transfer Agreement (MTA). Please see your advisor, counselor or review the MTA course list on schoolcraft.edu/transfer and select "Michigan Transfer Agreement".

English Communication: Minimum 6 credit hours. Completion of a minimum of two English communication courses within a set of courses.

ENG 101M and ENG 102M* or ENG 102M and ENG 221M* or ENG 102M and COMA 103M+* or ENG 221M and COMA 103M+*

Humanities+: Minimum 4 credit hours. Completion of a minimum of two humanities courses from two different disciplines.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre.

Mathematics: Minimum 4 credit hours. Completion of a minimum of one mathematics course from Schoolcraft's approved Michigan Transfer Agreement (MTA) course list.

Natural Sciences: Minimum 7 credit hours. Completion of a minimum of two natural science courses from two different disciplines. One must be a lab science course.

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

Social Sciences+: Minimum 6 credit hours. Completion of a minimum of two social science courses from two different disciplines.

Anthropology, Geography+, History+, Political Science, Psychology or Sociology

Major Area of Study: Minimum 33 credit hours in liberal arts courses that satisfy transfer and academic goals and requirements.

Course Level: All courses that apply to this degree must be at the 100- through 400-level with a minimum grade point average (GPA) of 2.0.

Credit Requirement: Minimum 60 credit hours.

Institutional Requirements: Completion of all Schoolcraft College Core Abilities and a minimum of 16 credit hours associate-level Schoolcraft College General Education requirements in English, humanities, mathematics, natural sciences and social sciences. The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College General Education requirements. PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution area. Additionally, students may not use COMA 103M+* to satisfy both the humanities and English communications distribution area. Only certain Geography courses can be used for a natural science or social science course.

Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120. Courses may or may not transfer to another institution and are written in bold font. No SC occupational course maybe used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH

106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscriptM –e.g., PSYCH 153M –see category C.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g. , PSYCH 153M, BIOL 101ML, ECON 201M, ART 120M, MATH 111M. These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscriptM –e.g., MATH 111M. Information about the MTA requirements may be found at https://www.macrao.org/ .

Content Updated: 9-6-16

ABA - ASSOCIATE IN BUSINESS ADMINISTRATION Program Code: ABA.00401

The associate in business administration (ABA) transfer degree is for students who plan to transfer to a four-year college or university program. The ABA degree provides the frame-work for four-year college degrees in, but not limited to, the following majors: Accounting, Business Administration, Computer Information Systems, Finance, Human Resource Management, International Business, Management and Marketing. Schoolcraft students may complete the degree by following the requirements specified by the transfer institution and Schoolcraft College (SC).

Degree Focus: Transfer. Completion of a broad distribution of liberal arts courses in the English, humanities, mathematics, natural sciences, and social sciences distribution areas to meet transfer requirements toward a baccalaureate degree with an intended focus toward business and related fields.

Some liberal arts courses cannot be used to satisfy the Michigan Transfer Agreement (MTA). Please see your advisor, counselor or review the MTA course list on schoolcraft.edu/transfer and select “Michigan Transfer Agreement”.

English Communication: Minimum 6 credit hours. Completion of a minimum of two English communication courses within a set of courses.

ENG 101M and ENG 102M* or ENG 102M and ENG 221M* or ENG 102M and COMA 103M+* or ENG 221M and COMA 103M+*

Humanities+: Minimum 4 credit hours. Completion of a minimum of two humanities courses from two different disciplines.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

Mathematics: Minimum 4 credit hours. Completion of a minimum of one mathematics course from Schoolcraft’s approved Michigan Transfer Agreement (MTA) course list. MATH 122M recommended

Natural Sciences: Minimum 7 credit hours. Completion of a minimum of two natural science courses from two different disciplines. One must be a lab science course.

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

Social Sciences+: Minimum 11 credit hours. Completion of a minimum of two social science courses from two different disciplines.

ECON 201M and 202M required

POLS 105M recommended

Anthropology, Economics, Geography+, History+, Political Science, Psychology or Sociology

Major Area of Study: Minimum 11 credit hours.

ACCT 201 and 202 required

BUS 101 required

General Electives: Minimum 17 credit hours in liberal arts or occupational courses that satisfy transfer and academic goals and requirements.

BUS 207 recommended

CIS 115 or 120 recommended

Course Level: All courses that apply to this degree must be at the 100- through 400-level with a minimum grade point average (GPA) of 2.0.

Credit Requirement: Minimum 60 credit hours.

Institutional Requirements: Completion of all Schoolcraft College Core Abilities and a minimum of 16 credit hours associate-level Schoolcraft College General Education requirements in English, humanities, mathematics, natural sciences, and social sciences. The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College General Education requirements.

PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution area. Additionally, students may not use COMA 103M+* to satisfy both the humanities and English communications distribution area. Only certain Geography courses can be used for a natural science or social science course.

Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120.

Courses may or may not transfer to another institution and are written in bold font. No SC occupational course maybe used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts -e.g., ART 248, ENG205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscript M –e.g., PSYCH 153M – see category C.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153M, BIOL 101ML, ECON 201M, ART 120M, MATH 111M. These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA-identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscript M –e.g., MATH 111M. Information about the MTA requirements may be found at https://www.macrao.org/ .

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AE - ASSOCIATE IN ENGINEERING — Program Code: AE.00039

The associate in engineering (AE) degree is for students who plan to pursue a baccalaureate degree in engineering. Schoolcraft students may complete the degree by following the requirements specified by the transfer institution and Schoolcraft College (SC).

Degree Focus: Transfer. Completion of a broad distribution of liberal arts courses in the English, humanities, mathematics, natural sciences, and social sciences distribution areas that may be used to meet transfer requirements toward a baccalaureate degree with an intended focus toward engineering and related fields.

Some liberal arts courses cannot be used to satisfy the Michigan Transfer Agreement (MTA). Please see your advisor, counselor or review the MTA course list on schoolcraft.edu/transfer and select “Michigan Transfer Agreement”.

English Communication: Minimum 6 credit hours. Completion of a minimum of two English communication courses within a set of courses.

ENG 101M and ENG 102M* or ENG 102M and ENG 221M* or ENG 102M and COMA 103M+* or ENG 221M and COMA 103M+*

Humanities+: Minimum 4 credit hours. Completion of a minimum of two humanities courses from two different disciplines.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

Mathematics/Natural Sciences: Minimum 34 credit hours. Completion of a minimum of one mathematics course from Schoolcraft’s approved Michigan Transfer Agreement (MTA) course list.

MATH 150M, 151M, 240M and 252M required

Completion of a minimum of two natural science courses from two different disciplines. One must be a lab science course.

CHEM 111ML required

PHYS 211ML and 212ML required

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

Social Sciences+: Minimum 6 credit hours. Completion of a minimum of two social science courses from two different disciplines.

ECON 201M required

Anthropology, Economics, Geography+, History+, Political Science, Psychology or Sociology

Major Area of Study/General Electives: Minimum 10 credit hours in liberal arts courses that satisfy transfer and academic goals and requirements.

Course Level: All courses that apply to this degree must be at the 100- through 400-level with a minimum grade point average (GPA) of 2.0.

Credit Requirement: Minimum 60 credit hours.

Institutional Requirements: Completion of all Schoolcraft College Core Abilities and a minimum of 16 credit hours associate-level Schoolcraft College General Education requirements in English, humanities, mathematics, natural sciences and social sciences.

The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College General Education requirements.

PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution area. Additionally, students may not use COMA 103M+* to satisfy both the humanities and English communications distribution area. Only certain Geography courses can be used for a natural science or social science course.

Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120. Courses may or may not transfer to another institution and are written in bold font. No SC occupational course may be used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG 205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscriptM-e.g., PSYCH153M, see paragraph 2C.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153M, BIOL 101ML, ECON 201M, ART 120M, MATH 111M. These courses area sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscriptM-e.g., MATH 111M. Information about the MTA requirements may be found at https://www.macrao.org/ .

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AFA - ASSOCIATE IN FINE ARTS — Program Code: AFA.00402

The associate in fine arts (AFA) degree is for students who plan to transfer to a four-year college or university. The associate in fine arts degree is appropriate for most transfer programs leading to a baccalaureate degree in the fine arts fields. Schoolcraft students may complete the degree by following the requirements specified by the transfer institution and Schoolcraft College (SC).

Degree Focus: Transfer. Completion of a broad distribution of liberal arts courses in the English, humanities, mathematics, natural sciences, and social sciences distribution areas that may be used to meet transfer requirements toward a baccalaureate degree with an intended focus toward the arts, literature, music, humanities and other related fields.

Some liberal arts courses cannot be used to satisfy the Michigan Transfer Agreement (MTA). Please see your advisor, counselor or review the MTA course list on schoolcraft.edu/transfer and select “Michigan Transfer Agreement”.

English Communication: Minimum 6 credit hours. Completion of a minimum of two English communication courses within a set of courses.

ENG 101M and ENG 102M* or ENG 102M and ENG 221M* or ENG 102M and COMA 103M+* or ENG 221M and COMA 103M+*

Humanities+: Minimum 20 credit hours. Completion of a minimum of 20 credit hours in humanities from two different disciplines. Schoolcraft College recommends students complete a specific track as specified below while referring to the transfer institution’s requirements:

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

Art courses recommended: 120M, 121M, 122M, 115M, 116M, 201M, 248.

English (Literature) courses recommended: 200M, 205, 206, 243M, 244M, 245M, 246M, 248M.

Music courses recommended: 105M, 153M, 154M, 164M, 165M, 250M, 252M.

Mathematics: Minimum 4 credit hours. Completion of a minimum of one mathematics course from Schoolcraft’s approved Michigan Transfer Agreement (MTA) course list.

Natural Sciences: Minimum 7 credit hours. Completion of a minimum of two natural science courses from two different disciplines. One must be a lab science course.

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

Social Sciences+: Minimum 6 credit hours. Completion of a minimum of two social science courses from two different disciplines.

Anthropology, Economics, Geography+, History+, Political Science, Psychology or Sociology

Major Area of Study/General Electives: Minimum 17 credit hours in liberal arts courses that satisfy transfer and academic goals and requirements. Schoolcraft College recommends students complete a specific track as specified below while referring to the transfer institution's requirements:

Art courses recommended: 233M, 234M, 128M, 228M, 246M, 247M.
English (Literature) courses recommended: 170M, 203M, 275M
Music courses recommended: 114, 116, 117, 118, 121, 122, 124, 127, 131, 132, 133, 134, 135, 136, 137, 138, 140, 141, 142, 169, 214, 216, 217, 218, 224, 227, 231, 232, 233, 234, 235, 236, 240, 241, 242, 245, 246, 248, 249, 258, 259, 268, 269, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293.

Course Level: All courses that apply to this degree must be at the 100- through 400-level with a minimum overall grade point average (GPA) of 2.0.
Credit Requirement: Minimum 60 credit hours.
Institutional Requirements: Completion of all Schoolcraft College Core Abilities and a minimum of 16 credit hours associate-level Schoolcraft College general education requirements in English, humanities, mathematics, natural sciences and social sciences.
The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College general education requirements.
PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution area.
Additionally, students may not use COMA 103M+* to satisfy both the humanities and English communications distribution area.
Only certain Geography courses can be used for a natural science or social science course.
Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120.) Courses may or may not transfer to another institution and are written in bold font. No SC occupational course may be used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.
2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG 205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.
b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106). These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscriptM-e.g., PSYCH 153M, see paragraph 2c.
c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153M, BIOL 101ML, ECON 201M, ART 120M, MATH 111M. These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscriptM-e.g., MATH 111M. Information about the MTA requirements may be found at https://www.macrao.org/ .

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AGS – ASSOCIATE IN GENERAL STUDIES

Option 1 Program Code: AGS.00042
Option 2 Program Code: AGS.12X12

The associate in general studies degree (AGS) is for students who wish to earn an associate degree and want to transfer to a college or university through an occupational or individualized program of study.
Option 1 – complete a balanced set of liberal arts courses, as well as customizing any additional coursework.
Option 2 – complete two focused concentration areas of liberal arts courses, as well as customizing any additional coursework.
Degree Focus: Occupational or Transfer. Completion of a broad set of liberal arts courses in the English, humanities, mathematics, natural sciences and social sciences areas, as well as any distribution of occupational or applied areas of studies. This may include completion of a set of occupational courses that satisfy the development of occupational skills.
Some liberal arts courses cannot be used to satisfy the Michigan Transfer Agreement (MTA). Please see your advisor, counselor or review the MTA course list on schoolcraft.edu/transfer and select "Michigan Transfer Agreement".

English Communication: Minimum 6 credit hours. Completion of a minimum of two English communication courses within a set of courses.

ENG 101M and ENG 102M* or ENG 102M and ENG 221M* or ENG 102M and COMA 103M+* or ENG 221M and COMA 103M+*

OR

ENG 100 and ENG 106 or ENG 100 and ENG 116 or ENG 101M and ENG 106 or ENG 101M and ENG 107 or

General Liberal Arts Concentrations-Option 2 (only): Completion of any two of the following sets of either humanities, mathematics and natural science or social science course concentrations for a combined total of 24 credit hours, as well as coursework from every area to fulfill the Schoolcraft College General Education requirements:

Humanities+-Option 1: Minimum 4 credit hours. Completion of a minimum of two humanities courses.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

Humanities+-Option 2: Minimum 12 credit hours. Completion of a minimum of three humanities courses.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

NOTE: One humanities course must be selected to meet the Schoolcraft College General Education requirements regardless of general liberal arts concentration selected.

Mathematics/Natural Sciences-Option 1: Minimum 3 credit hours in mathematics. Completion of a minimum of one mathematics course.

Mathematics/Natural Sciences-Option 2: Minimum 12 credit hours.

Completion of a minimum of one mathematics course.

Completion of a minimum of two natural science courses.

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

NOTE: One course in math and one in science must be selected to meet the Schoolcraft College General Education requirements regardless of general liberal arts concentration selected.

Social Sciences+-Option 1: Minimum 6 credit hours. Completion of a minimum of two social science courses.

Anthropology, Economics, Geography+, History+, Political Science, Psychology or Sociology

Social Sciences+-Option 2: Minimum 12 credit hours. Completion of a minimum of three social science courses.

Anthropology, Economics, Geography+, History+, Political Science, Psychology or Sociology

NOTE: One social science course must be selected to meet the Schoolcraft College General Education requirements regardless of general liberal arts concentration selected.

Major Area of Study/General Electives – Option 1: Minimum 34 credit hours in any group of courses which are specific or supportive of the occupational and academic goals.

Major Area of Study/General Electives – Option 2: Minimum 30 credit hours in any group of courses which are specific or supportive of the occupational and academic goals.

Course Level: All courses that apply to this degree must be at the 100-through 400-level with a minimum overall grade point average (GPA) of 2.0.

Credit Requirement: Minimum 60 credit hours.

Institutional Requirements: Completion of all Schoolcraft College Core Abilities and a minimum of 16 credit hours associate-level Schoolcraft College General Education requirements in English, humanities, mathematics, natural sciences and social sciences.

The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College general education requirements.

PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution requirement. Additionally, students may not use COMA 103M+* to satisfy both the humanities and English communications distribution requirement.

Only certain Geography courses can be used for a natural science or social science course.

Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120. Courses may or may not transfer to another institution and are written in bold font. No SC occupational course may be used toward SC General Education(SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG 205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines- e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscript M –e.g., PSYCH 153M – see category C.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153M, BIOL101ML, ECON 201M, ART 120M, MATH 111M. These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscript M –e.g., MATH 111M.Information about the MTA requirements may be found at https://www.macrao.org/ .

Content Updated: 9- 6-16

AS - ASSOCIATE IN SCIENCE — Program Code: AS.00042

(Another program code may be specified for specific programs, such as the Pre-Pharmacy program.)

The associate in science (AS) degree is for students who plan to pursue baccalaureate degree in a science-related field. Schoolcraft students may complete the degree by following the requirements specified by the transfer institution and Schoolcraft College (SC).

Degree Focus: Transfer. Completion of a broad distribution of liberal arts courses in the English, humanities, mathematics, natural sciences and social sciences distribution areas that may be used to meet transfer requirements toward a baccalaureate degree with an intended focus toward the sciences and related fields.

Some liberal arts courses cannot be used to satisfy the Michigan Transfer Agreement (MTA). Please see your advisor, counselor or review the MTA course list on schoolcraft.edu/transfer and select “Michigan Transfer Agreement”.

English Communication: Minimum 6 credit hours. Completion of a minimum of two English communication courses within a set of courses.

ENG 101M and ENG 102M* or ENG 102M and ENG 221M* or ENG 102M and COMA 103M+* or ENG 221M and COMA 103M+*

Humanities+: Minimum 4 credit hours. Completion of a minimum of two humanities courses from two different disciplines.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

Mathematics/Natural Sciences: Minimum 20 credit hours. Completion of a minimum of one mathematics course from Schoolcraft’s approved Michigan Transfer Agreement (MTA) course list.

Completion of a minimum of two natural science courses from two different disciplines. One must be a lab science course.

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

Social Sciences+: Minimum 6 credit hours. Completion of a minimum of two social science courses from two different disciplines.

Anthropology, Economics, Geography+, History+, Political Science, Psychology or Sociology

Major Area of Study/General Electives: Minimum 24 credit hours in liberal arts courses that satisfy transfer and academic goals and requirements.

Course Level: All courses that apply to this degree must be at the 100- through 400-level with a minimum grade point average (GPA) of 2.0.

Credit Requirement: Minimum 60 credit hours.

Institutional Requirements: Completion of all Schoolcraft College Core Abilities and a minimum of 16 credit hours associate-level Schoolcraft College General Education requirements in English, humanities, mathematics, natural sciences and social sciences.

The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College General Education requirements.

PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution requirement. Additionally, students may not use COMA 103M+* to satisfy both the humanities and English communications distribution requirement.

Only certain Geography courses can be used for a natural science or social science course.

Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120. Courses may or may not transfer to another institution and are written in bold font. No SC occupational course may be used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscriptM -e.g., PSYCH 153M –see paragraph 2c.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153M, BIOL 101ML, ECON 201M, ART 120M, MATH 111M. These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscriptM-e.g., MATH 111M. Information about the MTA requirements may be found at https://www.macrao.org/ .

Content Updated: 9- 6-16

BS - BACHELOR IN SCIENCE — Program Code: BS.00042

(Another program code may be specified for specific programs, such as the Culinary Dietary Operations Management program.)

By obtaining a bachelor in science (BS) degree, students will be prepared to seek employment in their chosen career field.

Degree Focus: Occupational Specialization. Completion of a broad distribution of courses in the English, humanities, mathematics, natural sciences, and social sciences distribution areas, as well as occupational, technical and specialization courses that satisfy the development of a specialist skill set.

English Research: Minimum 3 credit hours. Completion of a minimum of one English course.

ENG 102M* or ENG 221M*

Humanities+: Minimum 4 credit hours. Completion of a minimum of two humanities courses from two different disciplines.

Art, Communication Arts, English (Literature), Foreign Language, History+, Humanities, Music, Philosophy or Theatre

Mathematics/Natural Sciences/Technical or Specialization: Minimum 20 credit hours. Completion of a minimum of one mathematics course from Schoolcraft's approved Michigan Transfer Agreement (MTA) course list.

Completion of a minimum of two natural science courses from two different disciplines. One must be a lab science course.

Biology, Chemistry, Geography+, Geology, Nutrition or Physics

Completion of technical or specialization courses that serve as specific or supportive of the occupational and academic goals.

Accounting, Business, Culinary, Finance or Nutrition

Social Sciences+: Minimum 6 credit hours. Completion of a minimum of two social science courses from two different disciplines.

Anthropology, Economics, Geography+, History+, Political Science, Psychology, or Sociology

Major Area of Study: Minimum 30 credit hours in a major specialization concentration area are identified and listed in the program requirements which are specific or supportive of the occupational and academic goals.

General Electives: Minimum 57 credit hours in liberal arts, technical, or specialization courses that satisfy career and academic goals and requirements.

Course Level: All courses that apply to this degree must be at the 100- through 400-level with a minimum overall grade point average (GPA) of 2.0. A minimum of 30 credits must be at the 300- or 400-level.

Credit Requirement: Minimum 120 credit hours.

Institutional Requirements: Completion of all Schoolcraft College (SC) Core Abilities and a minimum of 30 credit hours bachelor-level Schoolcraft College General Education requirements in English, humanities, mathematics, natural sciences and social sciences. The Michigan Transfer Agreement (MTA) may be used to fulfill the Schoolcraft College General Education requirements.

PLEASE NOTE: Students may not use the same History course to satisfy both the humanities and social sciences distribution requirement.

Only certain Geography courses can be used for a natural science or social science course.

Types of Courses: There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120. Courses may or may not transfer to another institution and are written in bold font. No SC occupational course may be used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2.Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG 205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application-based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153M, HIST 138M+, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscriptM-e.g., PSYCH 153M, see paragraph 2c.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153M, BIOL 101ML, ECON 201M, ART 120M, MATH 111M. These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA identified courses are intended to meet the general education requirements at transfer institutions and are denoted with a subscriptM-e.g., MATH 111M. Information about the MTA requirements may be found at https://www.macrao.org/ .

Content Updated: 9- 6-16

Key

c = Credentials – a documentation of satisfactory completion of courses that result in a nationally recognized acknowledgement of learning and skills. Schoolcraft College offers skills certificate, certificate, associate and bachelor degree credentials.
^ = Courses used for SCGE and MTA – a list of specific disciplines and course numbers with each distribution area that meet the requirements for Schoolcraft General Education (SCGE) and the Michigan Transfer Agreement (MTA) may be found here: http://www.schoolcraft.edu/catalog .
T = Transferability of courses should be discussed with a counselor or academic advisor and may be dependent on the receiving institution.
Plain text = Liberal Arts courses used to satisfy Schoolcraft College General Education (SCGE) requirements.
M = Liberal Arts courses used to satisfy SCGE requirements and the Michigan Transfer Agreement (MTA) requirements.
* = Only these courses or combination of courses may be used to satisfy the final requirement for MTA English Communications.
L = Lab Science
+ = Students may not use the same History course to satisfy both the humanities and social sciences or COMA 103M+* to satisfy both humanities and English communications. Only certain Geography courses can be used for a natural science or social science course.
Italicized text = Applied Liberal Arts courses that do not qualify to meet SCGE requirements or MTA requirements (Courses may or may not transfer to another institution.)
BOLD = Occupational Courses have a direct career relationship, and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study. (Courses may or may not transfer to another institution. No SC occupational courses may be used toward SC General Education or to meet the requirements for MTA.)

Liberal Arts courses will typically transfer to another institution. They provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences.

General Education/Core Abilities/Michigan Transfer Agreement

General Education

General education requirements address the knowledge, intellectual concepts and attitudes associated with being an educated and well-rounded person. These courses are a required part of any associate degree or bachelor's degree offered at any college or university. Students must take the minimum courses that meet Schoolcraft's General Education requirements. In addition to those courses that are identified as general education, Schoolcraft College also offers numerous courses in dozens of subject areas, including liberal arts, sciences and specific occupational areas. As a part of a quality initiative, Schoolcraft's liberal arts courses are used to assess students' general education preparation.

Core Abilities

Colleges, universities and employers want students who possess abilities that go beyond a particular discipline, including the ability to:

- Communicate effectively
- Think creatively and critically
- Use technology effectively
- Use mathematics
- Manage information
- Work cooperatively
- Act responsibly
- Demonstrate social and cultural awareness

At Schoolcraft College, the core abilities are developed in all occupational and liberal arts courses. Our associate degree programs are designed to ensure that students who graduate have mastered these eight core ability expectations. An on-going quality assurance process is used to ensure that Schoolcraft's courses and programs will develop a student's competencies in the core abilities. This quality assurance process meets not only the students' needs, but also those of our accrediting body, The Higher Learning Commission.

Michigan Transfer Agreement (MTA)

The MTA makes it easier for students to transfer their general education courses earned at community colleges like Schoolcraft to participating four-year institutions in the State of Michigan and gives students more flexibility in the selection of courses they can take to satisfy the general education requirements. See next page for specific course requirements.

Schoolcraft College General Education and Michigan Transfer Agreement Requirements

General Education

General education requirements address the knowledge, intellectual concepts and attitudes associated with being an educated and well-rounded person. These courses are a required part of any associate degree or bachelor's degree offered at any college or university. Students must take the minimum courses that meet Schoolcraft's General Education requirements. In addition to those courses that are identified as general education, Schoolcraft College also offers numerous courses in dozens of subject areas, including liberal arts, sciences and specific occupational areas. As a part of a quality initiative, Schoolcraft's liberal arts courses are used to assess students' general education preparation.

Fulfill the Michigan Transfer Agreement (MTA)

The MTA makes it easier for students to transfer their general education courses earned at community colleges like Schoolcraft to participating four-year institutions in the State of Michigan and gives students more flexibility in the selection of courses they can take to satisfy the general education requirements.

Schoolcraft College Associate Degree General Education Requirements

Distribution Area	Course Requirements
English Communication: 6 credit hours	Select one combination of courses based on program requirements
Humanities: 1 to 4 credit hours	Select a minimum of one course
Mathematics: 3 to 5 credit hours	Select a minimum of one course
Sciences: 3 to 5 credit hours	Select a minimum of one course
Social Sciences: 3 to 4 credit hours	Select a minimum of one course
Total Credits	16 to 24 credit hours

Schoolcraft College Bachelor Degree General Education Requirements

Distribution Area	Course Requirements
English Communication: 3 credit hours	English Research: ENG 102M or ENG 221M
Humanities: 4 credit hours	Select two courses from two different disciplines
Mathematics: 4 to 5 credit hours	Select at least one MTA math course
Sciences: 7 to 9 credit hours	Select two science courses, with one course containing a lab, from two different disciplines
Social Sciences: 6 credit hours	Select two courses from two different disciplines
Total Credits: Minimum of 30 credit hours required	Electives may be chosen from Schoolcraft General Education courses or MTA courses

Michigan Transfer Agreement Requirements

(Only these courses or combination of courses may be used to satisfy the final requirement for MTA math or communications.)

Distribution Area	Course Requirements
English Communication: 6 credit hours	ENG 101M & ENG 102M * or ENG 101M & COMA 103M +* or ENG 102M & COMA 103M +* or ENG 102M & ENG 221M * or ENG 221M & COMA 103 M+ *
Humanities: 4 to 8 credit hours	Select two MTA courses from two different disciplines
Mathematics: 4 to 5 credit hours	Select at least one from the following: College Algebra, Statistics, Quantitative Reasoning (a.k.a. Every-day or Liberal Arts Mathematics), or an advanced level course in any of these areas
Sciences: 7 to 9 credit hours	Select two MTA science courses, with one course containing a lab, from two different disciplines
Social Sciences: 6 to 8 credit hours	Select two MTA courses from two different disciplines
Total Credits: Minimum of 30 credit hours required	Electives may be selected from MTA courses

Courses and Credentials at Schoolcraft College

There are two primary types of courses that may be used towards fulfilling credentials such as certificate, associate, or bachelor degrees at Schoolcraft College (SC). The nature, goals, and use of each course determines the type of course and how it applies toward each credential at Schoolcraft College or at other transfer institutions. The two types of courses include occupational and liberal arts courses.

1.Occupational Courses – Occupational courses have a direct career relationship and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study-e.g., ACCT 103, EMT 115, MFG 211, WELD 120. Courses may or may not transfer to another institution and are written in bold font. No SC occupational course may be used toward SC General Education (SCGE) or to meet the requirements for Michigan Transfer Agreement (MTA)^ T.

2. Liberal Arts Courses – Liberal Arts courses provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences areas. Liberal Arts courses may fall into three categories:

a. Applied Liberal Arts – courses that are focused on building particular skills through the practice and application of talents or concepts-e.g., ART 248, ENG 205, CAB 100, THEA 204, MUSIC 114, COLLS 105. Applied Liberal Arts courses typically do not transfer to other institutions and are written in italicized font. A subset of these courses may be used toward meeting the requirements for SCGE.

b. Liberal Arts used for Schoolcraft College General Education (SCGE) – courses that are theory-based or application- based which offer a wide distribution of experiences to students across multiple disciplines-e.g., ENG 100, PSYCH 153 , HIST 138 +, MATH 106. These courses may or may not transfer to another institution. The Liberal Arts courses that do not transfer are typically applied in nature and are written in plain text-e.g., MATH 106. The Liberal Arts courses that are intended to transfer are typically theory-based and are denoted with a subscript M - e.g., PSYCH 153M –see category C.

c. Liberal Arts Courses used for Transfer – courses which are theory-based and offer a wide distribution of experiences to students across multiple disciplines-e.g., PSYCH 153 , BIOL 101 L, ECON 201 , ART 120 , MATH 111M . These courses are a sub-set of the Liberal Arts used for SCGE which meet both SCGE and the requirements for the Michigan Transfer Agreement (MTA). The MTA identified courses that are intended to meet the general education requirements at transfer institutions are denoted with a subscript M -e.g., MATH 111M . Information about the MTA requirements may be found at https://www.macrao.org/ .

Key

c = Credentials – a documentation of satisfactory completion of courses that result in a nationally recognized acknowledgement of learning and skills. Schoolcraft College offers skills certificate, certificate, associate and bachelor degree credentials.

BOLD = Occupational Courses have a direct career relationship, and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study. (Courses may or may not transfer to another institution. No SC occupational courses may be used toward SC General Education or to meet the requirements for MTA.)

^ = Courses used for SCGE and MTA – a list of specific disciplines and course numbers within each distribution area that meet the requirements for

Schoolcraft General Education (SCGE) and the Michigan Transfer Agreement (MTA) may be found here:
http://schoolcraft.edu/academics/curriculum-guides#.WIIv6k0zVi4

T = Transferability of courses should be discussed with a counselor or academic advisor and may be dependent on the receiving institution.

Italicized text = Applied Liberal Arts courses that do not qualify to meet SCGE requirements or MTA requirements (Courses may or may not transfer to another institution.)

Plain text = Liberal Arts courses used to satisfy Schoolcraft College General Education (SCGE) requirements.

M = Liberal Arts courses used to satisfy SCGE requirements and the Michigan Transfer Agreement (MTA) requirements.

+ = Students may not use the same History course to satisfy both the humanities and social sciences or COMA 103'+* to satisfy both humanities and

English communications. Only certain Geography courses can be used for a natural science or social science course.

L = Lab Science

* = Only these courses or combination of courses may be used to satisfy the final requirement for MTA English Communications.

Liberal Arts courses will typically transfer to another institution. They provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences.

Liberal Arts Courses Fulfilling Schoolcraft College General Education and/or Michigan Transfer Agreement (MTA) Requirements

English Communication

English (ENG) 101M & 102M * or 102M & 221M * or 100 & 106 or 100 & 116 or 101M & 106 or 101M & 107 or 101M & 116 or ENG 101M & COMA 103M + * or ENG 102M & COMA 103M + * or ENG 221M & COMA 103M+ *

Humanities

Arabic (ARB)	101M , 102M , 201M , 202M
Art (ART)	113, 115M , 116M , 120M , 121M, 122M , 127M , 128M , 133M , 134M , 201M , 216, 221M, 222M , 228M, 231M , 233M , 234M , 235M , 246M , 247M
Chinese (CHIN)	101M , 102M
Communications (COMA)	103 +*, 200 , 201 , 210 , 230
French (FR)	101M , 102M , 201M , 202M
German (GER)	101M , 102M , 201M , 202M
History (HIST)	134M + , 137M+ , 138M+ , 141M+ , 151M+ , 152M+ , 153M+ , 230M+
Humanities (HUM)	106M , 150M , 190M , 201M , 202M , 203M , 204M , 210M , 212M , 215M
Italian (ITAL)	101M , 102M
Literature (ENG)	170M , 200M , 203M , 243M , 244M , 245M , 246M , 248M , 251M , 252M , 275M , 280M
Music (MUSIC)	104 , 105 , 107L, 149 , 153 , 154 , 155 , 164 , 165 , 250 , 252
Philosophy (PHIL)	243M , 247M , 257M , 277M
Spanish (SPAN)	101M , 102M , 201M , 202M
Theater (THEA)	101M , 210M , 211M , 231M , 232M , 241M

Mathematics

(MATH)	101, 102, 105, 106, 111M, 113, 119M , 122M , 126M , 129M , 135M , 145M , 150M , 151M , 230M , 240M, 252M

Sciences

Biology (BIOL)	100M L, 101M L, 103M , 104M , 105M, 114M , 115M, 120ML, 130ML, 140ML, 236ML, 237ML, 238M L, 240, 243ML
Chemistry (CHEM)	100L, 104L, 111ML, 117ML, 120ML, 213ML,214ML
Geography (GEOG)	105L+, 135ML+, 203M+. 212M+, 217M+. 2215M+
Geology (GEOL)	133M L , 134ML , 237ML
Nutrition & Food Science (NFS)	320, 360, 440L
Physics (PHYS)	104ML , 123ML , 181M L , 182M L , 211M L , 212ML

Social Sciences

Anthropology (ANTH)	112M , 117M , 120M , 201M , 211M , 214M
Economics (ECON)	103M , 201M , 202M
Geography GEOG)	133M+
History (HIST)	134M +, 137M+ , 138M+ , 141M+ , 151M+ , 152M+ , 153M+ , 230M+
Political Science (POLS)	105M , 109M , 205M , 207M , 209M
Psychology (PSYCH)	153M , 201M , 205M , 206M , 207M , 209M , 219M , 229M , 239M , 249M
Sociology (SOC)	201M , 205M , 209M , 210M , 220M , 290M

All courses on this list qualify to be used toward meeting Schoolcraft College General Education requirements and are a part of a liberal arts distribution of learning.

Key

Plain text = Liberal Arts courses used to satisfy Schoolcraft College General Education (SCGE) requirements.
M = Liberal Arts courses used to satisfy SCGE requirements and the Michigan Transfer Agreement (MTA) requirements.
* = Only these courses or combination of courses may be used to satisfy the final requirement for MTA English Communications.
L = Lab Science
+ = Students may not use the same History course to satisfy both the humanities and social sciences or COMA 103M+* to satisfy both humanities and English
communications. Only certain Geography courses can be used for a natural science or social science course.
Italicized text = Applied Liberal Arts courses that do not qualify to meet SCGE requirements or MTA requirements (Courses may or may not transfer to another institution.)
BOLD = Occupational Courses have a direct career relationship, and focus on developing necessary knowledge and skills to enter the work force within the chosen field of study. (Courses may or may not transfer to another institution. No SC occupational courses may be used toward SC General Education or to meet the requirements for MTA.)
Liberal Arts courses will typically transfer to another institution. They provide general knowledge and theory in the arts, language and communication, humanities, natural sciences, math and social sciences.

Content Revised 2/7/17

ACCOUNTING

Credentials

Accounting for Small Business skills certificate	17cr.
Accounting certificate	33 cr.
Accounting AAS degree	62-65 cr.

Major Description

Virtually every business and organization needs someone to manage their financials. Schoolcraft's accounting program will prepare you for a career as a bookkeeper or accountant with courses that cover the principles of accounting, income tax preparation, payroll and current accounting software. The accounting program offers three options for specialization:

- Accounting associate in applied science degree: Earning this associate degree is a first step towards a career in accounting and also prepares the student to transfer to a four-year college or university to earn a bachelor's degree.
- Accounting certificate: This certificate program takes approximately three semesters to complete and prepares students for a position as an entry-level bookkeeper.
- Accounting for small business skills certificate: This program is a good option for anyone interested in working at a small business as an entry level bookkeeper or to enhance their potential for small-business management.

National Median Salaries for Accounting-related positions *(source: US BLS);*

Accounting clerk: $35,170
Tax Preparer: $37,240
Accountant (Bachelor's degree): $63,550
Auditor (Bachelor's degree): $63,550

Accounting for Small Business Skills Certificate

Schoolcraft program code # CRT.00365

The accounting program is designed to familiarize students with the work and challenges facing accountants. This certificate program is designed for those:

who seek entry-level bookkeeping positions in specialized areas;
who seek a credential in order to receive pay raises, promotions, or benefits from employers;
or who currently own or are starting a small business.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

ACCT 201	Principles of Accounting 1	4	ACCT 263	Computerized Accounting Using QuickBooks	3
CIS 120	Software Applications	3	Elective	*Select four tax credit hours from list*	4
	Total Credits	**7**	ACCT 238	Federal Tax Accounting	4
				OR	
			ACCT 138	Income Tax Preparation	2
				AND	
			ACCT 139	Michigan Taxes	2
				Total Credits	**7**

First Year—Winter Semester

Second Year—Fall Semester

Elective	Select one	3
CIS 180	Spreadsheet Applications—Current Software	
ACCT 262	Payroll Accounting	
	Total Credits	**3**

PROGRAM TOTAL 17 CREDITS

Accounting Certificate

Schoolcraft program code # 1YC.00001

The accounting program is designed to familiarize students with the work and challenges facing accountants. This certificate program prepares the student for a job as an entry-level bookkeeper within an accounting department or firm.

All courses are not offered each semester. Students should work with an academic advisor or counselor to set up a schedule that will work for them. Students who successfully complete all program courses qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

ACCT 201	Principles of Accounting 1	4	ACCT 202	Principles of Accounting 2	4
CIS 120	Software Applications	3	Elective	Select four tax credit hours from list	4

First Year—Winter Semester

ENG 101	English Composition 1	3	ACCT 238	Federal Tax Accounting	4
MATH 101	Business Mathematics	3		OR	
	Total Credits	**13**	ACCT 138	Income Tax Preparation	2
				AND	
			ACCT 139	Michigan Taxes	2
			BUS 207	Business Law 1	3
			ACCT 263	Computerized Accounting Using QuickBooks	3
				Total Credits	**14**

Second Year—Fall Semester

COMA 103	Fundamentals of Speech	3
ACCT 262	Payroll Accounting	3
	Total Credits	**6**

PROGRAM TOTAL 33 CREDITS

Accounting AAS Degree

Schoolcraft program code # AAS.00005

The accounting program is designed to familiarize students with the work and challenges facing accountants. The program provides training for those planning to seek a career in accounting.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester **First Year—Winter Semester**

ACCT 201	Principles of Accounting 1	4	ACCT 202	Principles of Accounting 2	4
CIS 120	Software Applications	3	CIS 180	Spreadsheet Applications—Current Software	3
ENG 101	English Composition 1	3	ACCT 263	Computerized Accounting Using QuickBooks	3
Mathematics	*Select one*	3-4	ECON 201	Principles of Macroeconomics	4
MATH 101	Business Mathematics			**Total Credits**	**14**
MATH 113	Intermediate Algebra for College Students				
	Total Credits	**114**			

First Year—Spring/Summer Semester

COMA 103	Fundamentals of Speech	3
ENG 106	Business English	3
	Total Credits	**6**

Second Year—Fall Semester **Second Year—Winter Semester**

ACCT 221	Intermediate Accounting 1	4	ACCT 222	Intermediate Accounting 2	4
ACCT 226	Cost Accounting	4	Elective	Select four tax credit hours from list	4
BUS 207	Business Law 1	3	ACCT 238	Federal Tax Accounting	4
Elective	*Select one*	3-4		OR	
ACCT 262	Payroll Accounting		ACCT 138	Income Tax Preparation	2
BUS 101	Introduction to Business			AND	
ECON 202	Principles of Microeconomics		ACCT 139	Michigan Taxes	2
	Total Credits	**14-15**	Elective	*Select one*	3-4
			ACCT 205	Accounting Internship	
			BUS 202	Business Ethics	
			BUS 240	International Business	
			PSYCH 153	Human Relations	
			POLS 209	International Relations	
			PHIL 247	Logic	
			SOC 201	Principles of Sociology	
			Science*	*Select any General Education Science course*	4
				Total Credits	**15-16**

PROGRAM TOTAL 62-65 CREDITS

**Number of credits may vary depending on the General Education Science course selection.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

BIOMEDICAL ENGINEERING TECHNOLOGY

Credentials

Biomedical Engineering Technologist AAS degree	66-72 cr.
Biomedical Applications post-associate certificate	16 cr.

Major Description

The biomedical engineering technology programs prepare students to work on sophisticated diagnostic equipment and medical devices in a health-care setting. Schoolcraft offers two educational options and additional experience opportunities in this exciting field:

- An associate in applied science degree teaches students to maintain and repair medical electronic equipment in hospitals, labs and industries engaged in the manufacture and sale of these products.
- The biomedical applications post-associate certificate is for individuals already working in the field that want to advance their career opportunities by providing additional knowledge and skills needed to meet the demands of the rapidly changing biomedical field.

A state-of-the-art lab enables students to gain first-hand knowledge of troubleshooting equipment and design prototypes. In addition, a two-semester long internship provides additional hands-on field training in one of the area's hospitals. Students must complete internships to be eligible to fulfill program requirements.

National Median Salaries for Biomedical Engineering Technology Positions

Biomedical Engineering Technician: $44,570 *(source: US BLS)*

Biomedical Engineering Technologist AAS Degree

Schoolcraft program code # AAS.00128

The biomedical engineering technologist (BMET) program is designed to develop technicians able to maintain and service medical electronic equipment in hospitals, pathological and hematological laboratories and industries engaged in the manufacture and sale of medical electronic equipment. The program is divided into two components. The first year (three semesters) culminates in an electronic technology certificate. In order for candidates to be eligible to apply for the second year of the program they must meet the following qualifications:

1. Have an overall GPA of 2.5.
2. Achieve a minimum GPA of 2.5 in each electronics course.
3. Achieve a minimum GPA of 3.0 in Biology 105.

Candidates who have met these conditions must be approved by the BMET Internship Coordinator before registering in BMET 116, BMET 204, BMET 254 or BMET 255. Due to the limited availability of worksites, candidates who have met these conditions will be prioritized for admission into the BMET sequence based on the following elements: BMET application date, overall GPA, position in the sequence of program courses. Students must complete internships to be eligible to fulfill program requirements.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

First Year—Fall Semester

ELECT 131	Basic Measurement and Reporting	3
ELECT 137	DC Circuits and Mathematical Modeling	5
ENG 101	English Composition	3
BIOL 105	Basic Human Anatomy and Physiology	4
	Total Credits	**15**

First Year—Winter Semester

ELECT 138	AC Circuits and Mathematical Modeling	5
ELECT 139	Diodes and Transistors	3
ELECT 180	LabVIEW Programming CORE 1 and 2	5
	Total Credits	**13**

First Year – Spring/Summer Session

ELECT 215	Operational Amplifiers and Linear Integrated Circuits	4
ELECT 219	Digital Logic Circuits	4
	Total Credits	**8**

Admission to the Biomedical Program Internship Sequence

Second Year—Fall Semester

BMET 116	Biomedical Instrumentation Terminology and Safety	3
MATH 102	Technical Mathematics	4
Social Science	*Select General Education Social Science course(s)*	3-4
PSYCH 153	Human Relations (recommended)	
English	*Select one*	3
ENG 102	English Composition 2	
ENG 116	Technical Writing	
	Total Credits	**13-14**

Second Year—Winter Semester

BMET 204	Biomedical Instrumentation Terminology and Safety 2	4
BMET 254	Biomedical Equipment Internship 1	3
Elective*	*Select from list*	3-4
Elective*	*Select from list*	3-4
Humanities	*Select General Education Humanities course(s)*	1-4
COMA 103	Fundamentals of Speech (recommended)	
	Total Credits	**14-19**

Second Year—Spring/Summer Session

BMET 255	Biomedical Equipment Internship 2	3
	Total Credits	**3**

PROGRAM TOTAL 66–72 CREDITS

** Number of credits may vary depending on the course selection.*

Electives

BMET 125	Laser Safety Concepts	3	ELECT 145	Fluid Power	4
CIS 171	Introduction to Networking	3	ELECT 218	AC/DC Motors	3
CIS 235	Managing and Troubleshooting PCs	3	ELECT 228	Electronic Troubleshooting	3
COMPS 124	Introduction to Personal Computers and Software	3	ELECT 251	Programmable Logic and Industrial Controls	4
COMPS 126	Technical Programming	3	MET 103	Introduction to Materials Science	3
ELECT 144	Introduction to Microcontrollers	3			

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor or counselor.

Biomedical Applications Post-Associate Certificate

Schoolcraft program code # PAC.00178

This post-associate certificate in biomedical applications is designed to provide working professionals who have experience and/or training in biomedical engineering opportunities to study new technologies and innovations.

Completion of this program will enhance a professional's ability to meet the demands of rapidly changing technologies in the biomedical field. These courses are also intended to meet requirements for current and future professional certification.

Prior to admission to this program, students must have completed a minimum of an accredited associate degree in biomedical engineering technology. All courses are not offered each semester. Students should work with an academic advisor or counselor to set up a schedule that will work for them. The post-associate certificate is awarded upon successful completion of 16 credit hours (exact number may vary slightly due to credit value or content of course).

Program Courses A student is required to choose the two courses listed below:

CIS 171	Introduction to Networking	3
CIS 235	Managing and Troubleshooting PCs	3

A student may choose from any of the courses listed below:

BUS 220	Supervision	3	CIS 251	IT Project Management	3
CIS 125	Principles of Information Security	3	CIS 271	Local Area Networks	3
CIS 172	Network Security Fundamentals	3	CIS 273	TCP/IP and Network Architectures	3
CIS 173	Wireless Local Area Networks	3	ELECT 144	Introduction to Microcontrollers	3
CIS 178	Technical Microsoft Windows	3	QM 107	Quality Planning and Team Building	3
CIS 250	Systems Development and Design	4			

Completion of a minimum of 16 credit hours is required. Courses can be taken through independent study.

Students may choose an applicable 200-level elective.

BREWING AND DISTILLATION TECHNOLOGY

Credentials

Brewing and Distillation Technology Certificate	24 cr.

Major Description

The Brewing and Distillation Technology Certificate offered by Schoolcraft College provides detailed knowledge that can help jumpstart a career in craft beverage or brewing operations or provide the needed background for an entrepreneur who is considering opening a brewpub or microbrewery. The curriculum has been designed with direct input from brewing professionals and owners of breweries, brewpubs, and distilleries in order to meet industry talent needs and to address the issues faced by aspiring entrepreneurs in this growing industry. The course of study focuses on the vital aspects of the beer and distilled spirits industry, including business, brewing science, operations, product finishing and packaging, and customer service.

National Median Salaries for Brewing and Distillation Technology-related positions *(source: Glassdoor.com)*

Assistant Brewers: $25,000–$30,000

Brewmasters: $34,000 per year

Brewery and Distillation Technology Certificate

Schoolcraft program code # 1YC00084

This program is intended for those who are interested in starting a career in brewing, expanding their current brewing knowledge and practice, or considering opening a brewpub or microbrewery. The curriculum has been designed with direct input and participation by brewing professionals, owners of breweries and brewpubs and distillers. The program is designed by craft beverage professionals to meet industry needs, and also addresses potential issues faced by entrepreneurs aspiring to startup a microbrewery or brewpub in Michigan. The course of study introduces the science, operation, business, finishing, packaging and service of beer and distilled spirits, and prepares the student to pursue employment in a wide variety of positions in a craft beverage operation.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
BDT 101	Brewing Science	4	BDT 210	Cellaring, Packaging and Quality Management	4
BDT 120	Beer Styles and Flavors	2	BDT 220	Advanced Brewing and Distillation	4
BDT 110	Brewhouse Operations and Technology	4	BDT 230	Beverage Management and Service	4
BDT 140	Marketing and Operations Management	2		**Total Credits**	**12**
	Total Credits	**12**			

PROGRAM TOTAL 24 CREDITS

BROADCAST COMMUNICATIONS

Credentials

Broadcast Communications AAS degree	60-62 cr.

Major Description

Broadcast communications plays a vital role in the dissemination of news, information and entertainment worldwide and has become even more important in the Internet age. Whether you are interested in becoming a radio or television reporter, a director, video editor, web producer or sound engineer, you can prepare yourself by earning an associate degree in broadcast communications. Through a unique partnership between Schoolcraft and the Specs Howard School of Media Arts, you can:

- Spend a year at the Specs Howard studios to get real-world training while earning credits toward your degree.
- Earn the balance of your credits at Schoolcraft.
- Start the program at either Specs Howard or Schoolcraft.
- Get additional hands-on experience through Schoolcraft's Video Production Club, and working local sporting and community events like broadcasts of Schoolcraft College's team events.
- Follow in the footsteps of program graduates who work at local and national radio and television stations and in the film and television industries.

National Median Salaries for Broadcast Communications-related positions *(source: US BLS);*

Announcer: $27,750
Newscaster: $35,870
Audio & Video Editors: $46,280
Broadcasting/Sound Technicians: $41,200

Broadcast Communications AAS Degree

Schoolcraft program code # AAS.00041

Students will develop the skills necessary to function as entry-level employees in radio, television, cable television or industrial television settings. The sixty-hour program is articulated with the Specs Howard School (SHS) of Media Arts, Inc. located in Southfield, Michigan. Fifteen credit hours are awarded for completion of the SHS certificate program and the remaining credit hours are taken at Schoolcraft.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. The program can begin at either school. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

Specs Howard School of Media Arts

Approved Articulation Credit	15
Total Credits	**15**

Schoolcraft College Requirements

Students are encouraged to take their college requirements early in their program. However, these courses are not required before beginning program courses.

First Year-Fall Semester

Mathematics	*Select one*	3-4
MATH 101	Business Mathematics	
MATH 113	Intermediate Algebra for College Students	
BUS 101	Introduction to Business	3
COMA 103	Fundamentals of Speech	3
ENG 101	English Composition	3
THEA 210	Acting 1—Theory and Elements	3
	Total Credits	**15-16**

First Year—Winter Semester

CIS 105	Computer Orientation	1
COMA 201	Discussion	3
GEOG 135	Earth Systems	4
PSYCH 201	Introductory Psychology	4
THEA 241*	Oral Interpretation of Literature	3
	Total Credits	**15**

Second Year—Fall Semester

ENG 107	Introduction to Journalism	3
GEOL 133	Physical Geology	4
POLS 105	Survey of American Government	3
SOC 201	Principles of Sociology	3
Elective	*Any 100- or 200-level course not previously taken*	2-3
	Total Credits	**15-16**

PROGRAM TOTAL 60-62 CREDITS

** This class is offered on a rotational basis. Contact Liberal Arts office for current offerings.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

BUSINESS

Credentials

Business-Basic certificate	32 cr.
Small Business for Entrepreneurs certificate	30-31 cr.
Business-General AAS degree	62-64 cr.
Marketing and Applied Management AAS degree	62-64 cr.
Small Business for Entrepreneurs AAS degree	62-64 cr.

Major Description

Schoolcraft's business program prepares students for a variety of positions in the corporate world or to run their own business and lays the foundation to transfer to a four-year college of university to earn a bachelor's degree.

There are four associate in applied science degrees (AAS) and three certificate options available in business:

- Business General degree: This general degree program provides a good basis to qualify students for several entry-level jobs.
- Marketing and Applied Management degree: Marketing and sales is the lifeblood of any business and this program gives students a well-rounded business background to prepare them to manage and market a company's products or services.
- Small Business for Entrepreneurs degree: The program is designed for those who own and/or operate a small business or plan to start their own company. The curriculum combines general business, liberal arts and elective course options to give the student a diversified background that is vital in today's small-business environment.
- Business Information Technology degree: Information technology professionals are in high demand in today's business world and this degree program provides students with a sound business education combined with computer science courses to meet the challenges of managing an organization's information technology needs.
- Business-Basic Certificate: This certificate program provides students with a well-rounded introduction to the business world, including courses in accounting, economics and the basics of business. It prepares them for the pursuit of an associate degree or for various job opportunities.
- Small Business for Entrepreneurs Certificate: Completion of this certificate program will prepare students for the unique challenges entrepreneurs and small business owners routinely deal with in today's highly competitive business world.
- Business Information Technology Certificate: Many of today's employers are requesting students with a solid background in business and computer systems and completion of this certificate program gives students a knowledge base in both areas to help them in their pursuit of a career as an information technology professional.

National Media Salaries for Business-related positions *(source: US BLS)*

Manager Trainee: $34,750

Market Researcher: $34,750

Sales Manager/Supervisor: $74,870 (with Bachelor's degree)

Small Business Owner: $40,000-$63,000 (*Glassdoor.com)*

Business- Basic Certificate

Schoolcraft program code # 1YC.00002

The basic business program introduces students to accounting, economics and the basics of business. Completion of the program positions the student for pursuit of an associate degree or for transition into the business community.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

			First Year—Winter Semester		
BUS 101	Introduction to Business	3	ENG 102	English Composition 2	3
MATH 101	Business Mathematics	3	Accounting	*Select one*	4
ENG 101	English Composition 1	3	ACCT 103	Introduction to Accounting	
COMA 103	Fundamentals of Speech	3	ACCT 201	Principles of Accounting 1	
BUS 220	Supervision	3	ECON 201	Principles of Macroeconomics	4
	Total Credits	**15**	PSYCH 153	Human Relations	3
				Total Credits	**14**

First Year—Spring Session

BUS 202	Business Ethics	3
	Total Credits	**3**

PROGRAM TOTAL 32 CREDITS

Small Business for Entrepreneurs Certificate

Schoolcraft program code # 1YC.00213

The small business for entrepreneurs certificate is for individuals considering starting a small business, those who already own a business or students who seek employment opportunities managing a small business. The coursework prepares learners for the unique challenges small business owners and entrepreneurs routinely deal with in today's highly competitive business world.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

BUS 103	Organizing a Small Business	3	BUS 104	Operating a Small Business	3
ENG 101	English Composition 1	3	BUS 122	Advertising	3
BUS 220	Supervision	3	ENG 102	English Composition 2	3
Accounting	*Select one*	4	PSYCH 153	Human Relations	3
ACCT 103	Introduction to Accounting		Elective	*Select from the list below.*	2-3
ACCT 201	Principles of Accounting 1			**Total Credits**	**14-15**
	Total Credits	**13**			

First Year—Spring Session

BUS 202	Business Ethics	3
	Total Credits	**3**

PROGRAM TOTAL 30-31 CREDITS

Electives

ACCT 138	Income Tax Preparation	2	BUS 123	Consumer Behavior	3
ACCT 263	Computerized Accounting Using QuickBooks	3	BUS 215	Business on the Web	3
BUS 120	Strategic Selling	3			

Marketing and Applied Management AAS Degree

Schoolcraft program code # AAS.00009

The Schoolcraft College marketing and applied management program produces well-trained individuals who work in the distribution of goods and services. These individuals serve the customer and represent the company to the consumer. Therefore, graduates must be able to think, communicate and apply knowledge of business.

Career opportunities are available in occupations ranging from buying and selling to distribution management.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

BUS 101	Introduction to Business	3	MATH 101	Business Mathematics	3
BUS 122	Advertising	3	BUS 120	Strategic Selling	3
BUS 123	Consumer Behavior	3	ENG 102	English Composition 2	3
Accounting	*Select one*	4	PSYCH 153	Human Relations	3
ACCT 103	Introduction to Accounting		Science*	*Select any General Education Science course*	4
ACCT 201	Principles of Accounting 1			**Total Credits**	**16**
ENG 101	English Composition 1	3			
	Total Credits	**16**			

Second Year—Fall Semester

Second Year—Winter Semester

BUS 217	Business Management	3	BUS 226	Principles of Marketing	3
BUS 220	Supervision	3	BUS 202	Business Ethics	3
BUS 240	International Business	3	BUS 204	Personal Finance	3
HUM 106	Introduction to Art and Music	1	BUS 215	Business on the Web	3
ECON 201	Principles of Macroeconomics	4	Electives	*Select from the list*	4-6
	Total Credits	**14**		**Total Credits**	**16-18**

PROGRAM TOTAL 62-64 CREDITS

**Number of credits may vary depending on the General Education course selection.*

Electives

BUS 103	Organizing a Small Business	3	CIS 120	Software Applications	3
BUS 104	Operating a Small Business	3	CIS 180	Spreadsheet Applications—Current Software	3
BUS 207	Business Law 1	3	COMA 103	Fundamentals of Speech	3
BUS 208	Business Law 2	3	ENG 116	Technical Writing	3
BUS 230	Human Resource Management	3	MATH 122	Elementary Statistics	4
BUS 291	Business Internship	3			

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Business-General AAS Degree

Schoolcraft program code # AAS.00008

The general business program is intended to provide students with a balanced curriculum composed of liberal arts, general business, and technical skills to develop a unified awareness of the activities and operational setting of a business. The program is intended to lay a foundation for a variety of entry-level positions in business that may ultimately lead to specialized study in some area of management training.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

BUS 101	Introduction to Business	3	BUS 120	Strategic Selling	3
MATH 101	Business Mathematics	3	Accounting	*Select one*	4
BUS 122	Advertising	3	ACCT 103	Introduction to Accounting	
ENG 101	English Composition 1	3	ACCT 201	Principles of Accounting 1	
Humanities*	Select any General Education Humanities course	3	ENG 102	English Composition 2	3
COMA 103	Fundamentals of Speech	3	PSYCH 153	Human Relations	3
	Total Credits	**15**	Science*	*Select any General Education Science course*	4
				Total Credits	**17**

Second Year—Fall Semester **Second Year—Winter Semester**

BUS 217	Business Management	3	BUS 204	Personal Finance	3
BUS 220	Supervision	3	BUS 207	Business Law 1	3
ECON 201	Principles of Macroeconomics	4	BUS 215	Business on the Web	3
BUS 202	Business Ethics	3	BUS 226	Principles of Marketing	3
BUS 240	International Business	3	Electives	*Select from the list*	2-4
	Total Credits	**16**		**Total Credits**	**14-16**

PROGRAM TOTAL 62-64 CREDITS

**Number of credits may vary depending on the General Education course selection.*

Electives

BUS 103	Organizing a Small Business	3	BUS 291	Business Internship	3
BUS 104	Operating a Small Business	3	CIS 120	Software Applications	3
BUS 123	Consumer Behavior	3	CIS 180	Spreadsheet Applications – Current Software	3
BUS 208	Business Law 2	3	ENG 116	Technical Writing	3
BUS 230	Human Resource Management	3	MATH 122	Elementary Statistics	4

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Small Business for Entrepreneurs AAS Degree

Schoolcraft program code # AAS.00011

The small business for entrepreneurs curriculum offers a well-balanced program of liberal arts courses, general business subjects, electives and the necessary training to meet the challenge of today's highly competitive business world. The small business for entrepreneurs curriculum is designed for those who already own and operate a small business, who are contemplating starting their own small business, or who seek employment opportunities as managers in small business.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

BUS 101	Introduction to Business	3	BUS 104	Operating a Small Business	3
BUS 103	Organizing a Small Business	3	Accounting	*Select one*	4
BUS 122	Advertising	3	ACCT 103	Introduction to Accounting	
MATH 101	Business Mathematics	3	ACCT 201	Principles of Accounting 1	
ENG 101	English Composition 1	3	ENG 102	English Composition 2	3
	Total Credits	**15**	Science*	*Select any General Education Science course*	4
			BUS 120	Strategic Selling	3
				Total Credits	**17**

Second Year—Fall Semester **Second Year—Winter Semester**

BUS 204	Personal Finance	3	BUS 207	Business Law 1	3
BUS 220	Supervision	3	BUS 226	Principles of Marketing	3
BUS 202	Business Ethics	3	BUS 230	Human Resource Management	3
HUM 106	Introduction to Art and Music	1	PSYCH 153	Human Relations	3
BUS 215	Business on the Web	3	Elective	*Select from the list*	2-4

Elective	*Select from the list*	3		**Total Credits**	**14-16**
	Total Credits	**16**			

PROGRAM TOTAL 62-64 CREDITS

**Number of credits may vary depending on the General Education course selection.*

Electives

ACCT 138	Income Tax Preparation	2	BUS 240	International Business	3
ACCT 263	Computerized Accounting Using QuickBooks	3	BUS 291	Business Internship	3
BUS 123	Consumer Behavior	3	CIS 120	Software Applications	3
BUS 208	Business Law 2	3	ECON 201	Principles of Macroeconomics	4
BUS 217	Business Management	3	ENG 116	Technical Writing	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

BUSINESS INFORMATION TECHNOLOGY

Credentials

Business Information Technology certificate	34-35 cr.
Business Information Technology AAS degree	64-66 cr.

Major Description

Business is becoming more complex every day due to the high-tech hardware and software used behind the scenes. If you enjoy staying current on the latest technological advances and finding the right technology to meet business needs, you can find a niche in this fast-growing field.

Information technology (IT) professionals help organizations in virtually every industry to determine the best use of automated systems to reach their goals.

This field requires analytical and problem solving skills, technical expertise and the ability to juggle projects while meeting deadlines and quality standards. Excellent communication skills are also essential.

Today's employers are looking for people who have a sound business background combined with the ability to develop or manage business computer systems. The widespread use of computers in all areas of business has generated new positions and expanded opportunities.

The associate in applied science degree program sets the stage for transfer to a four-year college or school.

The certificate program provides students with an overview of business and computer systems and results in a certificate of program completion.

Business Information Technology Certificate

Schoolcraft program code # 1YC.00242

The business information technology program is designed to meet the growing needs of industry for a new category of information technology professional. Today's employers increasingly request graduates who have of a sound business background combined with the ability to develop or manage business computer systems.

This is a fast growing field with continual changes in hardware, software and procedures. The widespread use of computers in all areas of business has generated new positions and expanded opportunities in Information Technology. Effective use of technology enables businesses to serve customers better, access more information, be more flexible in responding to business changes and increase employee productivity.

This certificate is designed to provide students with an overview of business and computer systems. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

			First Year—Winter Semester		
BUS 101	Introduction to Business	3	ACCT 201	Principles of Accounting 1	4
CIS 120	Software Applications	3	CIS 251	IT Project Management	3
CIS 129	Introduction to Programming Logic	3	BUS 220	Supervision	3
CIS 125	Principles of Information Security	3	CIS 250	Systems Development and Design	4
ENG 101	English Composition 1	3		**Total Credits**	**14**
	Total Credits	**15**			

First Year—Spring Session

BUS 217	Business Management	3
Elective	*Select from list*	2-3
	Total Credits	**5-6**

PROGRAM TOTAL 34-35 CREDITS

Business Information Technology AAS Degree

Schoolcraft program code # AAS.00277

The business information technology program is designed to meet the growing needs of industry for a new category of information technology professional. Today's employers increasingly request graduates who have a sound business background combined with the ability to develop or manage business computer systems.

This is a fast growing field with continual changes in hardware, software and procedures. The widespread use of computers in all areas of businesses has generated new positions and expanded opportunities in information technology. Effective use of technology enables businesses to serve customers better, access more information, be more flexible in responding to business changes and increase employee productivity.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

			First Year—Winter Semester		
ENG 101	English Composition 1	3	English	*Select one*	3
BUS 101	Introduction to Business	3	ENG 102	English Composition 2	
CIS 125	Principles of Information Security	3	ENG 106	Business English	

CIS 120	Software Applications	3	MATH 113	Intermediate Algebra for College Students	4
CIS Elective	Select CIS course from list	3	BUS 217	Business Management	3
	Total Credits	**15**	CIS 129	Introduction to Programming Logic	3
			Elective	*Select course from list*	3
				Total Credits	**16**

First Year—Spring/Summer Session

Social Science	*Select one*	3-4
POLS 105	Survey of American Government	
PSYCH 153	Human Relations	
PYSCH 201	General Psychology	
COMA 103	Fundamentals of Speech	3
	Total Credits	**6-7**

Second Year—Fall Semester

Second Year—Winter Semester

BUS 220	Supervision	3	CIS 251	IT Project Management	3
CIS 250	Systems Development and Design	4	ACCT 201	Principles of Accounting 1	4
CIS Elective	*Select CIS course from list*	2-3	ECON 201	Principles of Macroeconomics	4
Science*	*Select any General Education Science course*	4	Elective	*Select from list*	3
	Total Credits	**13-14**		**Total Credits**	**14**

PROGRAM TOTAL 64-66 CREDITS

**Number of credits may vary depending on the General Education Science course selection.*

Electives

BUS 207	Business Law 1	3	CIS 211	Introduction to C++	2
BUS 208	Business Law 2	3	CIS 221	Advanced C++	2
BUS 215	Business on the Web	3	CIS 223	Introduction to C#	3
BUS 226	Principles of Marketing	3	CIS 225	Database Management Systems	3
CIS 170	Microsoft Windows	3	CIS 235	Managing and Troubleshooting PCs	3
CIS 171	Introduction to Networking	3	CIS 255	Introduction to LINUX	3
CIS 176	Visual Basic.NET	3	CIS 265	Networking 1	3
CIS 178	Technical Microsoft Windows	3	CIS 276	Networking 2	3
CIS 185	Introduction to HTML	3	CIS 290	Object-Oriented Programming With Java	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

COMPUTER AIDED DESIGN/DRAFTING (CAD)

Credentials

CAD: Drafting-Technical Certificate	28 cr.
CAD: Mechanical AAS Degree	65 – 70 cr.

Major Description

Computer–aided design (CAD) has changed the world of design and the use of computer systems to assist in the creation, modification, analysis or optimization of designs has become the norm. Schoolcraft offers two CAD educational options for students who want to pursue a career in in this area:

- The CAD mechanical associate in applied science degree program focuses on design and project management.
- The CAD drafting technical certificate prepares students for employment as a CAD drafter or detailer. Students can also transfer into the associate in applied science degree program at any time.

National Median Salaries for Computer Aided Design/Drafting (CAD)-related positions *(source: US BLS)*

Mechanical Designer: $50,360 Tool Designer: $51,720 Technical Drafter: $49,630

CAD: Drafting-Technical Certificate

Schoolcraft program code # 1YC.00119

Skills developed in these courses prepare the student for employment as a CAD drafter or detailer. Students at any time may transfer into the computer aided design associate degree program.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CAD 103	Engineering Graphics	3	CAD 106	Advanced Drawing Views and Descriptive Geometry	4
MET 103	Introduction to Materials Science	3	MATH 119	Trigonometry	3
MFG 102	Basic Machining Processes	3	MFG 105	Manufacturing Processes	4
MATH 113*	Intermediate Algebra for College Students	4	Elective	Select one	4
	Total Credits	**13**	CAD 211	CATIA—Level 1	
			CAD 221	SolidWorks—Level 1	
				Total Credits	**15**

PROGRAM TOTAL 28 CREDITS

** MATH 113 may be waived if student has successfully completed high school Algebra II or based on student's placement test score.*

CAD: Mechanical AAS Degree

Schoolcraft program code # AAS.00170

Technology improvements have moved the world of design from the drafting arena to the data management and design world. The designer now must produce multiple design proposals through a process which includes modeling, simulation, performance analysis and free form fabrication. Product life cycle management concepts are ingrained into this program addressing the management of all data related to the design, production and support of manufactured goods.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CAD 103	Engineering Graphics	3	CAD 106	Advanced Drawing Views and Descriptive Geometry	4
ENGR 100	Introduction to Engineering and Technology	3	MFG 105	Manufacturing Processes	4
MET 103	Introduction to Materials Science	3	CAD 211	CATIA – Level 1	4
MATH 113*	Intermediate Algebra for College Students	4	CAD 221	SolidWorks – Level 1	4
Humanities	*Select General Education Humanities course(s)*	1-4		**Total Credits**	**16**
COMA 103	Fundamentals of Speech (recommended)				
	Total Credits	**14-17**			

First Year—Spring/Summer Session

MATH 119	Trigonometry	3
English	*Select one*	3
ENG 100	Communication Skills	
ENG 101	English Composition 1	
	Total Credits	**6**

Second Year—Fall Semester			Second Year—Winter Semester		
DSGN 180	Machine Elements and Design	4	DSGN 250	Tool, Die, and Fixture Design	4
ENG 116	Technical Writing	3	Elective	*Select one*	3-4
MFG 102	Basic Machining Processes	3	DSGN 280	Capstone Project	
CAD 107	Detailing	4	CAD 290	Computer Aided Design Internship	
	Total Credits	14	PHYS 123	Applied Physics	5
			Social Science	Select General Education Social Science course(s)	3-4
			PSYCH 153	Human Relations (recommended)	
				Total Credits	**15-17**

PROGRAM TOTAL 65-70 CREDITS

**** MATH 113 may be waived if student has successfully completed high school Algebra II or based on student's placement test score.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

COMPUTER GRAPHICS TECHNOLOGY

Credentials

Foundation skills Certificate	16 cr.
3D and Video Graphics Certificate	30 cr.
Graphic Arts Certificate	30 cr.
Web and Interactive Media Certificate	30 cr.
3D and Video Graphics AAS degree	61-62 cr.
Graphic Arts AAS degree	61-62 cr.
Web and Interactive Media AAS degree	61-62 cr.
Post-associate certificate	16-20 cr.

Major Description

The merger of art and computer technology is the basis of the program options available for students interested in a career in the expanding fields of graphic design and computer graphics.

Students learn how to use professional level software, hardware and peripherals, and to apply the principles of design, typography and color theory to the creation of effective print- and electronic-based visual communication. The computer graphics technology tracks prepare students for a career in the fields of 3D and video graphics, web and interactive media or digital arts, leading to either a certificate or an associate of applied science degree. Instruction in the programs expands on the skills achieved in the foundation skills certificate or equivalent experience.

The certificate programs provide students with the opportunity to expand their design and application skills for a specific career within the graphic design and computer graphics industry and learn the principles of design to create professional level visual communications and how to apply software, hardware and peripherals.

In addition to the skills and knowledge students acquire in the certificate programs, the degree programs include coursework that meets the general education requirements for a Schoolcraft associate in applied science (AAS) degree. The degree programs' capstone classes expand the students' creative and practical skills.

It is highly recommended that students meet with faculty for advice in selecting their electives. The foundation skills certificate or equivalent skills must be achieved before starting one of the specialty track certificate or AAS programs.

National Median Salaries for Computer Graphics Technology-related positions

Graphic Designer: $44,150

Web Page Designer: $35,000-$80,000

Foundation Skills Certificate

Schoolcraft program code # CRT.00364

The foundation skills certificate provides students with basic design and application skills for a career in the fields of graphic design and computer graphics. These skills are required for entry into any of the computer graphics technology certificate tracks.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for a certificate of completion.

Note: Schoolcraft has articulation agreements with some high schools and career/technical centers which allow for credits earned to be applied toward a specific Schoolcraft certificate or associate degree. In addition, students may have some non-instructional life experiences that make them eligible for credit. Students should work with an academic advisor or counselor to explore their options for transfer and work life credit.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

CGT 109	Design Concepts and Technology	3
CGT 123	Illustration—Illustrator	3
CGT 125	Digital Imaging 1—Photoshop	3
CGT 127	Publishing—InDesign	3
HUM 106	Introduction to Art and Music	1
Track Option	*Select one*	3
CGT 247	3D Video: 3D Animation—Introduction	
CGT 136	Web Interactive: Web Design and Development 1	
ART 120	Digital Arts: Drawing: Theory and Elements	
	Total Credits	**16**

PROGRAM TOTAL 16 CREDITS

Computer Graphics Technology Certificate Specialty Tracks

The computer graphics technology specialty tracks leading to a certificate expand on the skills achieved in the foundation skills certificate or equivalent experience. These certificates give students the opportunity to expand their design and application skills for a specific career within the graphic design and computer graphics industry. The foundation skills certificate or equivalent skills must be achieved before starting of the specialty track certificate programs. Classes with no prerequisite can be taken before starting the program.

Computer Graphics Technology: 3D and Video Graphics Certificate

Schoolcraft program code # 1YC.00132

This certificate prepares students for a career combining the skills of three-dimensional imaging and video production. With the industry's expansion of computer graphics imaging (CGI), these skills will allow the students to create 3D objects and composite videos with special effects and motion graphics. It creates the opportunity to develop simulations, engineering and architectural visualization for advertising and marketing projects. All courses are not offered each semester. Students should work with an academic advisor, counselor or Computer Graphics Technology (CGT) faculty to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CGT 166	Photography	3	CGT 208	Digital Video Production	3
CGT 168	Storyboarding	3	CGT 210	Visual Effects Production	3
CGT 215	Motion Graphics 1—After Effects	3	CGT 246	Motion Graphics 2—After Effects	3
CGT 226	Digital Imaging 2—Photoshop	3	CGT 252	3D Animation—Animating	3
CGT 254	3D Animation—Advanced Models and Textures	3	CGT 256	Portfolio 3D—Reel Development	3
	Total Credits	**15**		**Total Credits**	**15**

PROGRAM TOTAL 30 CREDITS

Computer Graphics Technology: Graphic Arts Certificate

Schoolcraft program code # 1YC.00136

This program teaches students how to blend traditional art techniques with skill using professional graphic design software to create illustrative, fine art and graphic media. By including instruction in color, type, image structure, production planning and marketing, the program prepares students for a wide range of jobs within the design industry. All courses are not offered each semester. Students should work with an academic advisor, counselor or CGT faculty to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ART 128	The Human Figure in Art 1: Theory and Elements	3	ART 228	The Human Figure in Art 2: Theory and Elements	3
CGT 136	Web Design and Development 1	3	CGT 149	Typography	3
CGT 161	History of Graphic Design	3	CGT 231	Electronic Publishing	3
CGT 166	Photography	3	CGT 257	Portfolio Preparation	3
CGT 226	Digital Imaging 2—Photoshop	3	Elective	BUS 103 or CGT or ART	3
	Total Credits	**15**		**Total Credits**	**15**

PROGRAM TOTAL 30 CREDITS

Computer Graphics Technology: Web and Interactive Media Certificate

Schoolcraft program code # 1YC.00131

This certificate provides students with the web development, technical programming and graphic design skills necessary to build web and multimedia sites. The focus is on developing a skill set that enables students to stay in-step with constantly evolving requirements and standards in the interactive media industry. All courses are not offered each semester. Students should work with an academic advisor, counselor or Computer Graphic Technology (CGT) faculty to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CGT 149	Typography	3	CGT 213	Advanced 2D Animation	3
CGT 161	History of Graphic Design	3	CGT 212	Advanced Interactive Media	3
CGT 163	Web Design and Development 2	3	CGT 226	Digital Imaging 2—Photoshop	3
CGT 168	Storyboarding	3	CGT 234	Web Design and Development 3	3
CGT 141	Introduction to 2D Animation and Interactive Media	3	CIS 238	Java Script	3
	Total Credits	**15**		**Total Credits**	**15**

PROGRAM TOTAL 30 CREDITS

Computer Graphics Technology AAS Degree Specialty Tracks

The computer graphics technology programs prepare students for a career in the fields of 3D and video graphics, web and interactive media or digital arts. As in the certificate program, students learn how to use the principles of design, typography, and color theory to create professional level visual communications and how to apply software, hardware and peripherals to meet these goals. In addition to the certificate skills, the associate degree tracks include coursework that meets the general education requirements for a Schoolcraft associate in applied science (AAS) degree. The program's capstone classes expand the students' creative and practical skills. It is highly recommended that students meet with faculty for advice in selecting their electives. The foundation skills certificate or equivalent skills must be achieved before starting one of the specialty track AAS degrees. Classes with no prerequisite can be taken before starting the program.

Computer Graphics Technology: 3D and Video Graphics AAS Degree

Schoolcraft program code # AAS.00032

Similar to the 3D and video graphics certificate, this degree provides students for a career combining the skills of three-dimensional imaging and video production. In addition, it includes capstone courses that develop creative and practical skills beyond what is taught in the certificate program, as well as coursework that meets the general education requirements for a Schoolcraft associate in applied science (AAS) degree. The degree strengthens the student's position in the profession and gives the student an academic credential with a higher standing.

All courses are not offered each semester. Students should work with an academic advisor, counselor or CGT faculty to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree. Students wishing to pursue a post-associate certificate must have a computer graphics technology associate degree or equivalent professional experience.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
Mathematics	*Select one*	3-4	ENG 101	English Composition 1	3
MATH 101	Business Mathematics		COMA 103	Fundamentals of Speech	3
MATH 102	Technical Mathematics		CGT 208	Digital Video Production	3
MATH 113	Intermediate Algebra		CGT 246	Motion Graphics 2—After Effects	3
CGT 166	Photography	3	CGT 252	3D Animation—Animating	3
CGT 168	Storyboarding	3		**Total Credits**	**15**
CGT 215	Motion Graphics 1—After Effects	3			
CGT 254	3D Animation—Advanced Models and Textures	3			
	Total Credits	**15-16**			

Second Year—Fall Semester			**Second Year—Winter Semester**		
ENG 102	English Composition 2	3	Social Science	*Select one*	3
Science	*Select one*	4	POLS 105	Survey of American Government	
BIOL 101	General Biology		PSYCH 153	Human Relations	
CHEM 111	General Chemistry 1		CGT 210	Visual Effects	3
PHYS 104	Introduction to Astronomy		BUS 103	Organizing a Small Business	3
CGT 158	Sound Design	3	Capstone	*Select one*	3
CGT 226	Digital Imaging 2—Photoshop	3	CGT 250	Practical Application	
CGT 244	History of Animation	3	CGT 270*	Internship	
	Total Credits	**16**	CGT 298*	Honors Studies	
			CGT 256	Portfolio—Reel Development	3
				Total Credits	**15**

PROGRAM TOTAL 61-62 CREDITS

** These classes are offered as independent learning. Contact CGT faculty.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Computer Graphics Technology: Graphic Arts AAS Degree

Schoolcraft program code # AAS.00028

Similar to the graphic arts certificate, this program teaches students how to blend traditional art techniques with skill using professional graphic design software to create illustrative, fine art and graphic media, preparing students for a wide range of jobs within the design industry. In addition, it includes capstone courses that develop creative and practical skills beyond what is taught in the certificate program, as well as coursework that meets the general education requirements for a Schoolcraft associate in applied science (AAS) degree. The degree strengthens the student's position in the profession and gives the student an academic credential with a higher standing.

All courses are not offered each semester. Students should work with an academic advisor, counselor or Computer Graphics Technology (CGT) faculty to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree. Students wishing to pursue a post-associate certificate must have a computer graphics technology associate degree or equivalent professional experience.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
ENG 101	English Composition 1	3	ENG 102	English Composition 2	3
Mathematics	*Select one*	3-4	BUS 122	Advertising	3
MATH 101	Business Mathematics		ART 228	The Human Figure in Art 2: Theory and Elements	3
MATH 102	Technical Mathematics		CGT 166	Photography	3
MATH 113	Intermediate Algebra		CGT 226	Digital Imaging 2—Photoshop	3
ART 128	The Human Figure in Art 1: Theory and Elements	3		**Total Credits**	**15**
CGT 136	Web Design and Development 1	3			
CGT 161	History of Graphic Design	3			
	Total Credits	**15-16**			

Second Year—Fall Semester			Second Year—Winter Semester		
Science	*Select one*	4	Social Science	*Select one*	3
BIOL 101	General Biology		POLS 105	Survey of American Government	
CHEM 111	General Chemistry 1		PSYCH 153	Human Relations	
PHYS 104	Introduction to Astronomy		CGT 231	Electronic Publishing	3
COMA 103	Fundamentals of Speech	3	BUS 103	Organizing a Small Business	
Elective	*Select one*	3	Capstone	*Select one*	3
ART 246	Sculpture 1: Theory and Elements		CGT 250	Practical Application	
WELD 112	Contemporary Metal Sculpture		CGT 270*	Internship	
Elective	*Select one*	3	CGT 298*	Honors Studies	
	Any ART or CGT course		CGT 257	Portfolio Preparation	3
CGT 149	Typography	3		**Total Credits**	**15**
	Total Credits	**16**			

PROGRAM TOTAL 61-62 CREDITS

** These classes are offered as independent learning. Contact CGT faculty.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Computer Graphics Technology: Web and Interactive Media AAS Degree

Schoolcraft program code # AAS.00031

Similar to the graphic arts certificate, this program teaches students how to blend traditional art techniques with skill using professional graphic design software to create illustrative, fine art and graphic media, preparing students for a wide range of jobs within the design industry. In addition, it includes capstone courses that develop creative and practical skills beyond what is taught in the certificate program, as well as coursework that meets the general education requirements for a Schoolcraft associate in applied science (AAS) degree. The degree strengthens the student's position in the profession and gives the student an academic credential with a higher standing.

All courses are not offered each semester. Students should work with an academic advisor, counselor or Computer Graphics Technology (CGT) faculty to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree. Students wishing to pursue a post-associate certificate must have a computer graphics technology associate degree or equivalent professional experience.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
ENG 101	English Composition 1	3	ENG 102	English Composition 2	3
Mathematics	*Select one*	3-4	CGT 213	Advanced 2D Animation	3
MATH 101	Business Mathematics		CGT 161	History of Graphic Design	3
MATH 102	Technical Mathematics		CGT 168	Storyboarding	3
MATH 113	Intermediate Algebra		CGT 212	Advanced Interactive Media	3
CGT 163	Web Design and Development 2	3		**Total Credits**	**15**
CGT 149	Typography	3			
CGT 141	Introduction to 2D Animation and Interactive Media	3			
	Total Credits	**15-16**			

Second Year—Fall Semester			Second Year—Winter Semester		
Science	*Select one*	4	Social Science	*Select one*	3
BIOL 101	General Biology		POLS 105	Survey of American Government	
CHEM 111	General Chemistry 1		PSYCH 153	Human Relations	
PHYS 104	Introduction to Astronomy		CIS 238	Java Script	3
COMA 103	Fundamentals of Speech	3	BUS 103	Organizing a Small Business	3

CGT 234	Web Design and Development 3	3	Capstone	*Select one*	3
CGT 226	Digital Imaging 2—Photoshop	3	CGT 250	Practical Application	
BUS 122	Advertising	3	CGT 270*	Internship	
	Total Credits	**16**	CGT 298*	Honors Studies	
			CGT 257	Portfolio Preparation	3
				Total Credits	**15**

PROGRAM TOTAL 61-62 CREDITS

** These classes are offered as independent learning. Contact CGT faculty.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor.

Number of credits may vary depending on the course selection.

Computer Graphics Technology Post-Associate Certificate

Schoolcraft program code # PAC.00181

The post-associate certificate is for those students who have a degree in computer graphics and/or are working in the profession and wish to add an additional area of specialty to their portfolio. Students should take a combination of six courses based on the specific area of study. It is highly recommended that Computer Graphics Technology (CGT) faculty be consulted when selecting courses. Students can assemble courses to develop expertise in 3D animation, video graphics, web design, interactive media, publishing or graphic design. Prerequisite and co-requisite requirements must be honored.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. The post-associate certificate is awarded upon successful completion of 16 credits (exact number may vary slightly due to credit value of course.)

ART 115	Art History 1	4	CGT 210	Visual Effects Production	3
ART 116	Art History 2	4	CGT 212	Advanced Interactive Media	3
ART 120	Drawing: Theory and Elements	3	CGT 213	Advanced 2D Animation	3
ART 128	The Human Figure in Art 1: Theory and Elements	3	CGT 215	Motion Graphics 1—After Effects	3
ART 246	Sculpture 1: Theory and Elements	3	CGT 226	Digital Imaging 2—Photoshop	3
CGT 136	Web Design and Development 1	3	CGT 231	Electronic Publishing	3
CGT 141	Introduction to 2D Animation and Interactive Media	3	CGT 234	Web Design and Development 3	3
CGT 149	Typography	3	CGT 244	History of Animation	3
CGT 158	Sound Design	3	CGT 246	Motion Graphics 2—After Effects	3
CGT 163	Web Design and Development 2	3	CGT 247	3D Animation—Introduction	3
CGT 166	Photography	3	CGT 252	3D Animation—Animating	3
CGT 168	Storyboarding	3	CGT 254	3D Animation—Advanced Models and Textures	3
CGT 208	Digital Video Production	3	WELD 112	Contemporary Metal Sculpture	3

PROGRAM TOTAL 61-62 CREDITS

COMPUTER INFORMATION SYSTEMS

Credentials

Introductory certificate	27–28 cr .
Cisco Networking Academy skills certificate	16 cr.
Networking Technology Integration certificate	31 cr.
Computer Support Technician AAS degree	60–62 cr .
Programming skills certificate	16 cr.
Programming AAS degree	60–62 cr
Web Specialist certificate	30 cr.
Web Specialist AAS degree	64 cr .
Post-associate certificate	16 cr .

Major Description

If you are interested in learning the basics of software applications and programming, enhancing your skills by learning the latest in technology and network integration or preparing for a career as a support technician, entry-level programmer or web specialist, Schoolcraft's CIS program has what you need to succeed in the growing world of information technology. We offer three associate of applied science degrees and six certificates to match our students' needs and interests. The educational options include:

- **Introductory Certificate:** This certificate program introduces students to the operating system, concepts of programming logic, programming language and software applications. During or after the first year of this certificate program, students may choose to earn one of the computer information system associate degrees, providing all degree requirements are fulfilled.
- **Cisco Networking Academy Skills Certificate:** This certificate program is designed to provide students with an understanding of network fundamentals, proficiency working with network equipment such as routers and switches, and the latest LAN and WAN technologies in preparation to achieve the Cisco Certified Network Associate (CCNA) certification.
- **Networking Technology Integration Certificate:** The certificate curriculum provides students with in-depth understanding of the theory, hardware and software of computer networking and is applicable for both those who are new to the field or have networking experience.
- **Computer Support Technician AAS Degree:** This degree program prepares students for entry-level positions supporting users of microcomputer components of the operating system. Technicians assist users by recommending hardware and software, interpreting manuals, organizing storage, networking workstations and creating systems solutions using the microcomputer.
- **Programming Skills Certificate:** This certificate program is designed to introduce students to the top computer programming languages used in software development and web applications. Students will also learn how to use the Microsoft.NET framework, which is the common environment for building, deploying and running web services and applications in Windows. In addition, the new Visual Studio.NET will be used, a common development environment for the new .NET framework.
- **Programming AAS Degree:** This degree offers students a schedule of core computer courses and electives to prepare them for a position as an entry- level programmer. Students will learn how a computer programmer analyzes problems and writes step-by-step instructions to enable a computer system to process data efficiently.
- **Web Specialist Certificate:** With the technology of the Internet constantly evolving in terms of infrastructure and website development, his certificate program provides an overview of technical programming and graphic design for web page development needed to stay abreast of these techno- logical advances. Areas of study include programming logic, design concepts and technology and web design and development. Students will also learn about the latest in web technology and design programs, such as Adobe Flash, Illustrator and Photoshop and JavaScript.
- **Web Specialist AAS Degree:** Virtually every company and organization has a website on the Internet these days, and this degree program prepares students to be able to design web pages and program for the web in the constantly evolving world of website technology. It pro-vides working knowledge in key areas that are vital to becoming an Internet professional, including various programming languages, multimedia technologies, graphic development and web design tools.
- **Post-Associate Certificate:** Designed for working professionals who have earned an associate degree in applied science and have experience and/ or training in the computer field, it provides insight into the latest computer technology and will enhance their ability to meet the needs of the fast-changing computer information systems environment.

National Median Salaries for Computer Information Systems-related positions *(source: US BLS)*

Computer Support Specialist: $48,900
Microcomputer Support Tech: $36,620
Web Page Designer: $43,930
Programmer: $74,280
Network and Computer Systems Admin: $72,560
Web Developer: $62,500

Computer Information Systems Introductory Certificate

Schoolcraft program code # 1YC.00004

The computer information systems certificate program introduces students to the operating system and concepts surrounding programming logic. In addition, students obtain a basic knowledge of software applications and programming languages.

Students may select one of the computer information systems associate degree programs at any time during or after the first year. However, all degree requirements must be fulfilled.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CIS 115	Introduction to Computer Based Systems	3	ENG 101	English Composition 1	3
CIS 120	Software Applications	3	Mathematics	*Select one*	4
CIS 129	Introduction to Programming Logic	3	MATH 102	Technical Mathematics	
CIS Elective	*Select one*	3	MATH 113	Intermediate Algebra for College Students	
CIS 170	Microsoft Windows		CIS 176	Visual Basic.NET	3
CIS 178	Technical Microsoft Windows		CIS 225	Database Management Systems	3
	Total Credits	**12**	Elective	*Select from the list*	2-3
				Total Credits	**15-16**

PROGRAM TOTAL 27-28 CREDITS

Electives

CIS 122	Microsoft Outlook	2
CIS 125	Principles of Information Security	3
CIS 171	Introduction to Networking	3
CIS 251	IT Project Management	3
CIS 255	Introduction to LINUX	3

Cisco Networking Academy

Schoolcraft program code # CRT.00329

This fast paced certificate is geared towards working professionals who have experience and/or training in the computer field, or for someone with exposure to technology that is serious about obtaining Cisco certification. This curriculum provides students with an understanding of network fundamentals, proficiency working with network equipment such as routers and switches, and the latest LAN and WAN technologies in preparation to achieve the Cisco Certified Network Associate (CCNA) certification. Specific topics and skills covered are based on the latest Cisco Certified Networking Associate exam objectives and include the Cisco command line interface (CLI) and device configuration, IP addressing and subnetting, routing protocols, cabling, switching technologies, maintenance, and troubleshooting.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CNT 210	CCNA Networking 1	4	CNT 230	CCNA Networking 3	4
CNT 220	CCNA Networking 2	4	CNT 240	CCNA Networking 4	4
	Total Credits	**8**		**Total Credits**	**8**

PROGRAM TOTAL 16 CREDITS

Computer Information Systems: Networking Technology Integration Certificate

Schoolcraft program code # 1YC.00270

The curriculum provides students with an in-depth understanding of the theory, hardware, and software of computer networking. This program provides a complete introductory program for students or adult learners who are new to the field. For students who have networking experience, this program also offers more advanced networking study.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CIS 171	Introduction to Networking	3	CIS 172	Network Security Fundamentals	3
CIS 170	Microsoft Windows	3	CIS 173	Wireless Local Area Networks	3
	or		CIS 251	IT Project Management	3
CIS 178	Technical Microsoft Windows	3	CIS 271	Local Area Networks	3
CIS 235	Managing and Troubleshooting PCs	3	CIS 273	TCP/IP and Network Architectures	3
CIS 267	Home Technology Integration	4		**Total Credits**	**15**
ENGR 100	Introduction to Engineering and Technology	3			
	Total Credits	**16**			

PROGRAM TOTAL 31 CREDITS

Computer Information Systems: Computer Support Technician AAS Degree

Schoolcraft program code # AAS.00014

This program is designed to prepare the student for entry-level positions supporting users of computer systems and software. Technicians will assist computer users by recommending appropriate hardware and software, interpreting software manuals, organizing the disk storage, networking workstations and creating systems solutions.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

CIS 115	Introduction to Computer Based Systems	3	CIS 120	Software Applications	3
CIS 171	Introduction to Networking	3	Elective	*Select one*	3
Mathematics	*Select one*	4	CIS 170	Microsoft Windows	
MATH 102	Technical Mathematics		CIS 178	Technical Microsoft Windows	
MATH 113	Intermediate Algebra for College Students		ENG 102	English Composition 2	3
English	*Select one*	3	CIS 173	Wireless Local Area Networks	3
ENG 100	Communication Skills		CIS 235	Managing and Troubleshooting PCs	3
ENG 101	English Composition 1			**Total Credits**	**15**
	Total Credits	**13**			

First Year—Spring Session

Social Science	*Select one*	3-4
POLS 105	Survey of American Government	
PSYCH 153	Human Relations	
PSYCH 201	Introductory Psychology	
	Total Credits	3-4

Second Year—Fall Semester

CIS 180	Spreadsheet Applications—Current Software	3	CIS 215	Advanced Software Applications	3
CIS 225	Database Management Systems	3	CIS 250	Systems Development and Design	4
CIS 265	Networking 1	3	CIS 276	Networking 2	3
COMA 103	Fundamentals of Speech	3	Elective	*Select from the list*	3
Science*	*Select any General Education Science course*	4		**Total Credits**	**13**
	Total Credits	**16**			

PROGRAM TOTAL 60-61 CREDITS

**Number of credits may vary depending on the General Education Science course selection.*

Electives

CIS 125	Principles of Information Security	3
CIS 172	Network Security Fundamentals	3
CIS 251	IT Project Management	3
CIS 255	Introduction to LINUX	3
CIS 260	Introduction to UNIX	3
CIS 273	TCP/IP and Network Architectures	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Computer Information Systems: Programming Skills Certificate

Schoolcraft program code # CRT.00366

The Microsoft .NET framework is a common environment for building, deploying, and running web services and web applications in the Windows environment. This certificate is designed to introduce the student to the top four programming languages used in software development today. The student will use the new Visual Studio.NET, which is a common development environment for the new .NET Framework. The .NET Framework provides a feature-rich application execution environment, simplified development, and easy integration between a number of different development languages.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

CIS 129	Introduction to Programming Logic	3	CIS 176	Visual Basic.NET	3
	Total Credits	**3**	CIS 211	Introduction to C++	2
				Total Credits	**5**

First Year—Winter Semester

Second Year—Fall Semester			Second Year—Winter Semester		
CIS 221	Advanced C++	2	CIS 290	Object-Oriented Programming with Java	3
CIS 223	Introduction to C#	3		**Total Credits**	**3**
	Total Credits	**5**			

PROGRAM TOTAL 16 CREDITS

Computer Information Systems: Programming AAS Degree

Schoolcraft program code # AAS.00012

As business and industry embrace new technology and procedures, the need for specially trained people accelerates. This program is designed to prepare the student for a position as an entry-level programmer. Students will learn to become proficient in following directions, analyzing problems, and writing step-by-step instructions so that the computer will efficiently process the data needed to solve these problems. Accuracy, persistence, patience, and the ability to communicate both orally and in writing are important characteristics a computer programmer should possess.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
CIS 115	Introduction to Computer Based Systems	3	ENG 102	English Composition 2	3
CIS 129	Introduction to Programming Logic	3	Elective	*Select one*	3
Mathematics	*Select one*	4	CIS 170	Microsoft Windows	
MATH 102	Technical Mathematics		CIS 178	Technical Microsoft Windows	
MATH 113	Intermediate Algebra for College Students		CIS 225	Database Management Systems	3
COMA 103	Fundamentals of Speech	3	Science*	*Select any General Education Science course*	4
ENG 101	English Composition 1	3	Elective	*Select from the list*	3
	Total Credits	**16**		**Total Credits**	**16**

Second Year—Fall Semester			Second Year—Winter Semester		
CIS 176	Visual Basic.NET	3	CIS 250	Systems Development and Design	4
CIS 211	Introduction to C++	2	CIS 290	Object-Oriented Programming with Java	3
CIS 255	Introduction to LINUX	3	CIS 221	Advanced C++	2
Elective	*Select from the list*	6	Social Science	*Select one*	3-4
	Total Credits	**14**	POLS 105	Survey of American Government	
			PSYCH 153	Human Relations	
			PSYCH 201	Introductory Psychology	
			Elective	*Select from the list*	2-3
				Total Credits	**14-16**

PROGRAM TOTAL 60-62 CREDITS

Electives

CIS 120	Software Applications	3
CIS 122	Microsoft Outlook	2
CIS 125	Principles of Information Security	3
CIS 185	Introduction to HTML	3
CIS 223	Introduction to C#	3
CIS 238	JavaScript	3
CIS 251	IT Project Management	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection

Computer Information Systems: Web Specialist Certificate

Schoolcraft program code # 1YC.00241

The technology of the Internet is constantly evolving both in terms of delivery infrastructure and web site development tools. To stay abreast of these technological advances requires programming and design knowledge, skills and experience. A good site must include both quality visual communication design and functionality. Programming is needed for interactivity to search databases and track usage. Visual graphic design is needed to convey the content message and provide branding for products and services.

This certificate is designed to provide students with an overview of the technical programming and graphic design areas for web page development. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
CGT 109	Design Concepts and Technology	3	CIS 129	Introduction to Programming Logic	3
CGT 123	Illustration—Illustrator	3	CGT 163	Web Design and Development 2	3
CGT 125	Digital Imaging 1—Photoshop	3	CIS 238	JavaScript	3
CGT 136	Web Design and Development 1	3	CGT 141	Introduction to 2D Animation and Interactive Media	3
	Total Credits	**12**		**Total Credits**	**12**
Second Year—Fall Semester			**Second Year—Winter Semester**		
CGT 234	Web Design and Development 3	3	Elective	*Select one*	3
	Total Credits	**3**	CIS 176	Visual Basic.NET	
			C IS 223	Introduction to C#	
			CIS 290	Object-Oriented Programming with Java	
				Total Credits	**3**

PROGRAM TOTAL 30 CREDITS

Computer Information Systems: Web Specialist AAS Degree

Schoolcraft program code # AAS.00275

The technology of the Internet is constantly evolving both in terms of delivery infrastructure and website development tools. To stay abreast of these technological advances requires programming and design knowledge, skills and experience. A good site must include both quality visual communication design and functionality. Programming is needed for interactivity to search databases and track usage. Visual graphic design is needed to convey the content message and provide branding for products and services.

This degree is designed to prepare the Internet professional to design web pages and to program for the web. It provides the working knowledge of various programming languages, multimedia technologies, graphic development, and web design tools. The Internet professional may be involved with designing, developing, operating, maintaining and managing web-based publishing.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
CGT 109	Design Concepts and Technology	3	Mathematics	Select one	4
CGT 123	Illustration—Illustrator	3	MATH 102	Technical Mathematics	
CGT 125	Digital Imaging 1—Photoshop	3	MATH 113	Intermediate Algebra for College Students	
CIS 129	Introduction to Programming Logic	3	ENG 101	English Composition 1	3
CGT 136	Web Design and Development 1	3	CIS 171	Introduction to Networking	3
	Total Credits	**15**	COMA 103	Fundamentals of Speech	3
			CGT 163	Web Design and Development	3
				Total Credits	**16**

First Year—Spring Session

ENG 102	English Composition 2	3
	Total Credits	3

Second Year—Fall Semester			Second Year—Winter Semester		
CIS 250	Systems Development and Design	4	HUM 106	Introduction to Art and Music	1
CGT 234	Web Design and Development 3	3	Elective	*Select one*	3
CIS 238	JavaScript	3	CIS 176	Visual Basic.NET	
Social Science	*Select one*	3	CIS 223	Introduction to C#	
POLS 105	Survey of American Government		CIS 290	Object-Oriented Programming with Java	
PSYCH 153	Human Relations		CGT 141	Introduction to 2D Animation and Interactive Media	3
Elective	*Select from the list*	3	Science*	*Select any General Education Science Course*	4
	Total Credits	**16**	Elective	*Select from the list*	3
				Total Credits	**14**

PROGRAM TOTAL 64 CREDITS

** Number of credits may vary depending on the General Education Science course selected.*

Electives

CIS 125	Principles of Information Security	3
CIS 176	Visual Basic.NET	3
CIS 185	Introduction to HTML	3
CIS 223	Introduction to C#	3
CIS 225	Database Management Systems	3
CIS 255	Introduction to LINUX	3
CGT 212	Advanced Interactive Media	3
CGT 213	Advanced 2D Animation	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Computer Information Systems Post-Associate Certificate

Schoolcraft program code # PAC.00155

This post-associate certificate in computer science information systems is designed for working professionals who have experience and/or training in the computer field. This certificate will provide study in the newest technology and will enhance students' ability to meet the needs of the ever changing computer information systems environment.

Prior to admission in this program, students must have already completed a minimum of an accredited associate degree in applied science. All courses are not offered each semester. Students should work with an academic advisor or counselor to set up a schedule that will work for them. The post-associate certificate is awarded upon successful completion of 16 credit hours (exact number may vary slightly due to credit value of courses).

Program Courses

CIS 185	Introduction to HTML	3
CIS 211	Introduction to C++	2
CIS 221	Advanced C++	2
CIS 223	Introduction to C#	3
CIS 235	Managing and Troubleshooting PCs	3
CIS 238	JavaScript	3
CIS 250	Systems Development and Design	4
CIS 251	IT Project Management	3
CIS 255	Introduction to LINUX	3
CIS 265	Networking 1	3
CIS 276	Networking 2	3
CIS 290	Object-Oriented Programming with Java	3

Completion of a minimum of 16 credit hours is required. Courses can be taken through independent study.

COMPUTER SERVICE

Credentials

Computer Service Technician certificate	30 cr.

Major Description

This computer service technician certificate program provides the student with skills and understanding in the areas of technical support for computer systems, PCs, networks and peripheral devices. Students learn how to provide diagnostic and solutions to hardware, software and network problems.

National Median Salaries for Computer Service-related jobs:

Computer Service Technician: $36,620

Computer Service Technician Certificate

Schoolcraft program code # 1YC.00159

Computer service technicians provide technical support for computer systems, PCs, networks and peripheral devices. The technician needs to be able to provide diagnostic analysis and solutions to hardware, software and network problems. A technician will need to have a broad background in the areas of PCs, as well as network wiring and standards. The technician will also assist in the installation and maintaining of computer systems, networks and software.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

CIS 235	Managing and Troubleshooting PCs	3	CIS 265	Networking 1	3
COMPS 124	Introduction to Personal Computers and Software	3	COMPS 126	Technical Programming	3
ELECT 131	Basic Measurement and Reporting Skills	3	COMPS 147	Computer and Peripheral Maintenance and Management	4
ELECT 137	DC Circuits and Mathematical Modeling	5	CIS 120	Software Applications	3
	Total Credits	**14**		**Total Credits**	**13**

First Year—Winter Semester

First Year—Spring Session

Elective*	*CIS Course*	3
	Total Credits	**3**

PROGRAM TOTAL 30 CREDITS

** Any CIS course not previously taken.*

COSMETOLOGY MANAGEMENT

Credentials

Cosmetology Management AAS degree	67 cr.

Major Description

The associate degree in cosmetology management program is designed for cosmetologists who are interested in managing a salon or starting their own business. It focuses on the essentials of organizing and operating a business, along with the communication and people skills needed to be successful as a salon manager or owner.

National Median Salaries for Cosmetology Management-related jobs *(source: Glassdoor.com)*

Salon Manager: $39,929 Salon Owner: $79,000–$85,000

Cosmetology Management AAS Degree

Schoolcraft program code #AAS.00010

This program is designed to give licensed, practicing cosmetologists an opportunity to develop special skills in business-related activities and to earn an associate degree in applied science from Schoolcraft College.

Schoolcraft College will grant credit equal to 30 semester credit hours upon receipt of current and proper evidence of license based upon the standards of the State Board of Cosmetology. These credits will not be entered into the student's transcript until a minimum of 15 semester credit hours has been earned with a grade-point average of 2.0 at Schoolcraft College.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisite

	Current Cosmetology License	**30**

First Year—Fall Semester

BUS 101	Introduction to Business	3
BUS 103	Organizing a Small Business	3
MATH 101	Business Mathematics	3
ENG 101	English Composition 1	3
PSYCH 153	Human Relations	3
	Total Credits	**15**

First Year—Winter Semester

ACCT 03	Introduction to Accounting	4
BUS 104	Operating a Small Business	3
COMA 103	Fundamentals of Speech	3
ENG 116	Technical Writing	3
Social Science	*Select one*	3
POLS 105	Survey of American Government	
OC 201	Principles of Sociology	
	Total Credits	**16**

First Year—Spring/Summer Session

BIOL 101	General Biology	4
CIS 105	Computer Orientation	1
HUM 106	Introduction to Art and Music	1
	Total Credits	**6**

TOTAL 37 CREDITS

CURRENT COSMETOLOGY LICENSE 30 CREDITS

PROGRAM TOTAL 67 CREDITS

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

CRIMINIAL JUSTICE

Credentials

Criminal Justice AAS degree	62 cr.
Criminal Justice AAS degree with Academy	64 cr.

Major Description

Schoolcraft offers two criminal justice associate in applied science degrees to help prepare students for a career and quick advancement in this public safety field. The criminal justice AAS degree is geared toward working professionals in the field who are looking to enhance their on-the-job training with specialized criminal justice courses in communication, computing, health and human relations. This degree also helps students develop the skills needed to investigate human behaviors and take the appropriate measures to ensure the safety of the society.

The second criminal justice AAS degree with the academy is aimed at students aspiring to law enforcement careers and who want police academy experience in addition to the academic credentials. After completing the academy, students will be eligible to take the Michigan Commission on Law Enforcement Standards (MCOLES) Certification Exam which is a prerequisite for law enforcement employment in Michigan.

Both degrees help students expand their knowledge of the criminal justice system, including criminal law, police field operations and criminal investigation. They will also gain an understanding of the sociological, psychological, biological and environmental factors that cause deviant or criminal behavior.

Students who want to pursue a career as a law enforcement officer should review the "Employment Standards for Michigan Law Enforcement Officers" at www.michigan.gov/mcoles prior to beginning this area of study to ensure they meet certain psychological and physical requirements.

National Median Salaries for Criminal Justice-related positions

Detective or Criminal Investigator: $74,300

Police or Sheriff 's Patrol Officer: $56,280

Criminal Justice AAS Degree

Schoolcraft program code # AAS.00086

The criminal justice system is a complex system of thousands of federal, state and local agencies interconnected by the individuals that work in this field. Employment at any level in criminal justice requires an understanding of the sociological, psychological, biological and environmental factors that may influence deviant or criminal behavior. Employees of the criminal justice system use developed skills to investigate human behaviors and take the appropriate measures to ensure the safety of society. The criminal justice associate in applied science degree program objectives assist existing employees of the criminal justice system and prepares students for full employment in this field.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

CJ 113	Introduction to Criminal Justice System	3
CJ 102	Organization and Administration of Law Enforcement Agencies	3
POLS 105	Survey of American Government	3
COMA 103	Fundamentals of Speech	3
ENG 101	English Composition 1	3
	Total Credits	**15**

First Year—Winter Semester

HUM 106	Introduction to Art and Music	1
COR 110	Introduction to Corrections	3
CJ 104	Introduction to Security	3
PSYCH 153	Human Relations	3
English	*Select one*	3
ENG 116	Technical Writing	
ENG 102	English Composition 2	
CJ 107	Police Field Operations	3
	Total Credits	**16**

Second Year—Fall Semester

CJ 209	Basic Criminalistics	3
CJ 211	Criminal Law and Procedure	3
BIOL 103	Health Education	3
CIS 105*	Computer Orientation	1
MATH 101	Business Mathematics	3
Elective	*Any 100- or 200-level course not previously taken*	3
	Total Credits	**16**

Second Year—Winter Semester

CJ 201	Criminal Investigation	3
CJ 212	Criminology	3
CJ 221	Juvenile Justice	3
SOC 201	Principles of Sociology	3
CIS 115	Introduction to Computer Based Systems	3
	Total Credits	**15**

PROGRAM TOTAL 62 CREDITS

** CIS 105 may be waived if student has successfully completed a high school computer course or equivalent within the past five years.*

For more information about certification please contact: Michigan Commission on Law Enforcement Standards (MCOLES) 106 W. Allegan Street, Suite #600, Lansing, MI 48933 517-322-1417 www.michigan.gov/mcoles

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Criminal Justice AAS Degree with Academy

Schoolcraft program code # AAS.00086

In this program, the criminal justice courses are restricted to students who are officially admitted to this program.

The criminal justice system is a highly specialized field. Law enforcement officers are employed by 40,000 local police agencies nationwide as well as county sheriffs' departments. Law enforcement officers must be prepared to interact with the public in a position of responsibility and authority. Knowledge of the criminal justice system, including criminal law, police field operations, criminal investigation and human relations enhances the professionalism of the criminal justice system.

Candidates for employment as law enforcement officers must be certified by the Michigan Commission on Law Enforcement Standards (MCOLES). After completing the Police Academy (CJ 287), students may become certifiable by passing the MCOLES Certification Exam. Certification is valid for one year. Pre-service students, who are not employed by a law enforcement agency, must complete 41 credit hours of course work for the associate degree before taking CJ 287.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Becoming a law enforcement officer requires candidates to meet certain psychological and physical requirements. Please review "Employment Standards for Michigan Law Enforcement Officers" available at www.michigan.gov/mcoles prior to beginning this area of study.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

CJ 102	Organization and Administration of Law Enforcement Agencies	3	COR 110	Introduction to Corrections	3
POLS 105	Survey of American Government	3	CJ 211	Criminal Law and Procedure	3
COMA 103	Fundamentals of Speech	3	PSYCH 153	Human Relations	3
ENG 101	English Composition 1	3	English	*Select one*	3
BIOL 103	Health Education	3	ENG 116	Technical Writing	
	Total Credits	**15**	ENG 102	English Composition 2	
			CIS 105*	Computer Orientation	1
				Total Credits	**13**

First Year—Winter Semester

Second Year—Fall Semester

MATH 101	Business Mathematics	3	CJ 287**	Police Academy	21
CJ 209	Basic Criminalistics	3		**Total Credits**	**21**
CJ 212	Criminology	3			
CJ 221	Juvenile Justice	3			
SOC 201	Principles of Sociology	3			
	Total Credits	**15**			

Second Year—Winter Semester

PROGRAM TOTAL 64 CREDITS

** CIS 105 may be waived if student has successfully completed a high school computer course or equivalent within the past five years.*

*** CJ 287 requires a special admissions process. Contact the Public Safety Education office at 734-462-4306 for application requirements.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

CULINARY ARTS

Credentials

Culinary Arts certificate	24 cr.
Culinary Arts AAS degree	63-66 cr.

Major Description

Culinary Arts associate degree. This provides the necessary knowledge and skills to obtain advanced level positions in the restaurant and food service industries. The curriculum focuses on a variety of food service aspects, including food preparation, cost and portion control, quantity baking and pastry, butchery and charcuterie fabrication, dining room operations, food purchasing and menu formulation Culinary Arts certificate. This option provides the culinary foundation courses that prepare students for immediate entry in the workplace.

National Median Salaries for Culinary Arts-related positions

Chef: $42,480
Cook: $30,120
Food & Beverage Manager: $54,850
Food Service Manager: $47,960

The culinary arts program is certified by the American Culinary Federation Education Foundation (ACFEF). Accreditation assures that a program is meeting standards and competencies set for faculty, curriculum and student services.

For more information on accreditation please contact:

American Culinary Federation Wendy Laino, Accreditation Manager 180 Center Place Way, St. Augustine, FL 32095 904-824-4468 | wlaino@acfchefs.net

Culinary Arts Certificate

Schoolcraft program code # 1YC.00079

The culinary arts certificate is designed to prepare students for a career in the culinary arts field. The focus of the certificate is on establishing hands-on culinary skills and job-related performance characteristics necessary to successfully enter a basic food service occupation. The certificate prepares students for success by instruction in quality food preparation, portion control, quantity baking, breakfast and pantry work, quantity pastry, meat cutting and dining room operations.

This program contains some courses that are restricted only to students officially admitted to this program. Additionally, CUL 102, Culinary Sanitation, or proof of current ServSafe certification, and CUL 103, Introduction to Professional Cooking Skills and Techniques, are pre-program requirements.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

Upon completion of the certificate program, students may select the associate degree as their second-year option. All the requirements of that associate degree must be fulfilled, including all of the college requirements.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

CUL 102*	Culinary Sanitation	2
CUL 103	Introduction to Professional Cooking Skills and Technique	4
	Total Credits	**6**

First Year—Fall Semester

CUL 144	Baking	3
CUL 124	Breakfast and Pantry	3
CUL 125	Pastries 1	3
	Total Credits	**9**

First Year—Winter Semester

CUL 142	Butchery	3
CUL 128	Introduction to Food Techniques	3
CUL 143	Dining Room Service	3
	Total Credits	**9**

PROGRAM TOTAL 24 CREDITS

**If student provides documentation of current ServSafe certification, CUL 102 is not required. This course is also open to any Schoolcraft student.*

Culinary Arts AAS Degree

Schoolcraft program code # AAS.00087

The culinary arts associate degree program provides the skills necessary to enter food service occupations at advanced levels. The technical portion of the curriculum prepares students in quality food preparation, advanced food preparation, cost control, portion control, quantity baking, quantity pastry, advanced pastry, meat cutting, garde manger, dining room operation and classical cooking techniques. Food purchasing and storage functions, menu formulation, terminology, and decorative culinary skills are also covered.

This program contains some courses restricted to students officially admitted to this program. Additionally, CUL 102, Culinary Sanitation or proof of current ServSafe certification as well as

CUL 103, Introduction to Professional Cooking Skills and Techniques are pre-program requirements. The college requirements portion of the curriculum is vital to students' development.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

These courses are pre-program requirements and not included in degree program totals.

CUL 102*	Culinary Sanitation	2
CUL 103	Introduction to Professional Cooking Skills and Technique	4
	Total Credits	**6**

First Year—Fall Semester

CUL 144	Baking	3
CUL 124	Breakfast and Pantry	3
CUL 125	Pastries 1	3
ENG 100	Communication Skills	3
	OR	
ENG 101	English Composition 1	3
	Total Credits	**12**

First Year—Winter Semester

CUL 142	Butchery	3
CUL 128	Introduction to Food Techniques	3
CUL 143	Dining Room Service	3
MATH 101	Business Mathematics	3
	OR	
MATH 111	Applications--Utility of Math	4
	OR	
MATH 122	Elementary Statistics	4
	Total Credits	**12-13**

First Year—Spring/Summer Session

CHEM 100	Introduction to the Chemistry of Food for Culinary Arts	4
ENG 106	Business English	3
	OR	
ENG 102	English Composition 2	3
HUM 106	Introduction to Art and Music	1
CUL 241**	Culinary Nutrition	2
Elective***	*See list*	3-4
	Total Credits	**13-14**

Second Year—Fall Semester

CUL 227	Restaurant Cooking and Preparation	3
CUL 215	Charcuterie	3
CUL 244	International and American Cuisine	6
	Total Credits	**12**

Second Year—Winter Semester

CUL 240	Pastries 2	3
CUL 242	Á la Carte	3
CUL 243	Storeroom Operations	2
PSYCH 153	Human Relations	3
Elective***	*See list*	3-4
	Total Credits	**14-15**

PROGRAM TOTAL 63-66 CREDITS

**If student provides documentation of current ServSafe certification, CUL 102 is not required. This course is also open to any Schoolcraft student.*

***Signifies culinary course is open to any Schoolcraft student.*

****If BUS 217 or BUS 226 is selected, student must first complete the prerequisite course of BUS 101.*

Electives

Select two courses from the classes listed below to fulfill the elective requirement:

ART 120	Drawing: Theory and Elements	3	CM 203	Restaurant Concepts and Design	3
BUS 122	Advertising	3	CM 210**	Wine and Spirits	3
BUS 207	Business Law 1	3	CM 309**	Culinary Law	3
BUS 217***	Business Management	3	CUL 247**	Banquets and Catering	3
BUS 220	Supervision	3	CUL 260**	Competitive Ice Carving	3
BUS 226***	Principles of Marketing	3	CUL 267	Chocolatier	3
CIS 120	Software Applications	3	CUL 295	Salon Competition 1	3
CM 107**	Culinary Management—Food and Culture	3	CUL 297	Salon Competition 2	4
CM 109**	Hospitality Law	3	NFS 360**	Ensuring a Sustainable Food Supply	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

The culinary arts program is accredited by the American Culinary Federation Education Foundation, Inc. Accrediting Commission. Accreditation assures that a program is meeting standards and competencies set for faculty, curriculum and student services.

For more information on accreditation please contact:

American Culinary Federation
180 Center Place Way
St. Augustine, FL 32095

904-824-4468
Wendy Laino, Accreditation Manager
wlaino@acfchefs.net

CULINARY BAKING AND PASTRY ARTS

Credentials

Culinary Baking and Pastry Arts certificate	35 cr.

Major Description

The 30-week baking and pastry arts certificate program provides students with skills and a foundation to begin a career in baking and pastry including restaurant or hotel kitchens. Students will learn both fundamental and advanced bakery and pastry skills while studying all aspects of baking processes, techniques, safety and sanitation.

National Median Salaries for Baking and Pastry Arts-related positions *(source: USBLS)*

Baker: $30,920 Pastry Chef: $34,750

Culinary Baking and Pastry Arts Certificate

Schoolcraft program code # 1YC.00247

The baking and pastry arts certificate program provides the skills necessary to enter bakeries, pastry shops, restaurants and hotel bakery and pastry kitchens.

The curriculum prepares students in quality baking and pastry preparation. The two core courses start with the fundamental skills and build gradually to the more advanced and refined skills. Topics covered include professionalism, safety and sanitation, dietetic baking, baking processes and techniques, pies, tarts, contemporary tortes, French pastry, cold and frozen desserts, chocolates, cake decoration, breads, cookies and many other related nutritional desserts.

This program contains some courses restricted to students officially admitted to this program. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

These courses are pre-program requirements and not included in program totals.

CUL 102*	Culinary Sanitation	2
CBPA 103	Introduction to Baking and Pastry Skills and Techniques	2
	Total Credits	**4**

First Year—Fall Semester			**First Year—Winter Semester**		
CBPA 125	Pastries	20	CBPA 144	Baking	15
	Total Credits	**20**		**Total Credits**	**15**

PROGRAM TOTAL 35 CREDITS

** If student provides documentation of current ServSafe certification, CUL 102 is not required. This course is also open to any Schoolcraft student.*

CULINARY BACCALAUREATE DEGREE PROGRAM – BS

Credentials

Culinary and Dietary Operations Management BS Degree	131-132 cr.

Major Description

The Culinary and Dietary Operations Management Bachelor of Science degree is geared towards students with culinary experience who are interested in earning a degree that will prepare them for management positions in the food and nutrition industries. This program also combines business and science courses to broaden the student's knowledge base beyond culinary and improve their career opportunities.

This bachelor of science degree option is a "2 + 2" program that stipulates students must first achieve an associate degree in Culinary Arts from Schoolcraft College or another American Culinary Federation Education Foundation (ACFEF) accredited college prior to gaining admittance to the Culinary and Dietary Operations Management bachelor of science degree. Students must also complete all core ability and bachelor degree general education requirements in addition to completing required bachelor's degree courses. Schoolcraft College's 30 credits of bachelor-level general education requirements align with the Michigan Transfer Agreement. (Students should confer with their counselor or advisor to discuss these criteria and to make appropriate course selections.)

Professional-level American Culinary Federation (ACF) credentialed chefs interested in this program should contact the Culinary Department to explore their options.

National Median Salaries for Culinary Arts-related positions *(source: Burning Glass)*

Director of Dining Services: $59,662 Nutrition Services Director: $84,276 Hospitality Manager: $46,260

Bachelor of Science in Culinary and Dietary Operations Management Program

Schoolcraft program code # BS.00397

The Bachelor of Science (BS) in Culinary and Dietary Operations Management Program is designed for experienced culinary students who are interested in pursuing a bachelor's degree that will lead them to management positions in the food and nutrition industry. This degree program combines business and science courses to provide the culinarian with knowledge and expertise in management, food science and nutrition. Students entering into the Culinary and Dietary Operations Management Baccalaureate Degree Program are preparing themselves for positions of increasing responsibility in culinary and dietary operations. Completion of the degree requirements will also help students prepare to successfully complete exams for the Certified Dietary Manager (CDM) credential from the Association of Nutrition and Food Service Professionals (ANFP), an important credential for students interested in food service operations.

Upon completion of the BS in Culinary and Dietary Operations Management Program, students will have demonstrated proficiency in the following areas:

- Application of new technology to food service operations and nutritional analysis.
- Physical resource management including space, equipment, inventory, labor and overhead.
- Application of quantitative reasoning to food service operations.
- Sustainable agriculture and restaurant operations.
- Food and kitchen safety.
- Professionalism and leadership.
- Professional communication skills.
- Human resource operations.
- Interpretation of federal, state and local laws as they apply to food service operations.
- Assess financial resources required for successful food service operations.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

These courses are pre-program requirements and not included in program totals.

	Prior ACFEF Culinary Degree**	60
CUL 303	Culinary Program Practicals	5
	Total Credits	**65**

*** Professional-level American Culinary Federation Education Foundation (ACFEF) credentialed chefs interested in these programs may contact the Culinary Department to explore their options toward fulfilling the associate degree requirements using Prior Learning Credits. For more information about Prior Learning Credits, contact the Registrar.*

First Year—Fall Semester			**First Year—Winter Semester**		
ACCT	*Select one*	4	BUS 303	Entrepreneurship 1	3
ACCT 103	Introduction to Accounting		Mathematics	*Any MTA approved Mathematics Course*	4
ACCT 201	Principles of Accounting 1		ACCT 330	Managerial Accounting for a Food Service Operation	3
BUS 101	Introduction to Business	3	NFS 360	Ensuring a Sustainable Food Supply	3

BUS 220	Supervision	3	Humanities	*Any MTA approved Humanities Course*	3
BIOL 105	Basic Human Anatomy and Physiology	4	COMA 103	Fundamentals of Speech (recommended)	
	Total Credits	**14**		**Total Credits**	**16**

First Year—Spring/Summer Session

CUL 360	Purchasing Control	2
CHEM	*Select one*	4
CHEM 104	Fundamentals of Chemistry	
CHEM 111	General Chemistry 1	
	Total Credits	**6**

Second Year—Fall Semester

CUL 350	Food Safety Management	3
BUS 304	Entrepreneurship 2	3
NFS 440	Exploring Specialized Diets	3
CM 309	Culinary Law	3
Social Science	Any MTA approved Social Science Course	3-4
ECON 202	Principles of Microeconomics *(recommended)*	
	Total Credits	**15-16**

Second Year—Winter Semester

BUS 426	Marketing Strategies	3
FIN 420	Financial Management	3
NFS 320	Evolution of Dietary Needs Throughout the Lifecycle	3
NFS 480	Clinical Nutrition	3
	Total Credits	**12**

Second Year—Spring/Summer Session

NFS 490	Clinical Nutrition Internship	2
NFS 495	Culinary and Dietary Operations Capstone	1
	Total Credits	**3**

TOTAL 66-67 CREDITS
ADMISSION PREREQUISITE 65 CREDITS
PROGRAM TOTAL 131-132 CREDITS

Note: All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

EDUCATION—EARLY CHILDHOOD EDUCATION

Credentials

Child Development Associate (CDA) skills certificate	17 cr .
Early Childhood Education certificate	27 cr .
Early Childhood Education AAS degree	62-67 cr.

Major Description

To work effectively with children, early childhood educators must be sensitive to and understand the developmental stages of children. This curriculum contains theoretical and practical experiences to prepare students to work in early childhood programs in a variety of settings. The required field experiences expose students to best practices in early childhood education.

Students also have the option of transferring to a bachelor's degree program at a four-year institution.

National Median Salaries for Early Childhood Education-related positions *(source: US BLS)*

Child Care Worker: $19,510 | Preschool Teacher: $27,130 | Kindergarten Teacher: $53,090

Teacher Assistant: $23,640 | Child Care Director: $43,950

Child Development Associate (CDA) Skills Certificate

Schoolcraft program code # CRT.00315

The Child Development Associate (CDA) program represents a national effort to credential qualified early childhood educators working with children from birth to age five. At Schoolcraft College, CDA preparation consists of meeting the objectives and requirements of five courses in the early childhood curriculum that address the Competency Goals in 13 Functional Areas identified by the CDA Professional Preparation program. Candidates must also document 480 hours of professional experience working with children within the last three years, prepare a professional resource file and be formally observed working with children. For more information on the CDA Credential visit www.cdacouncil.org.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. The following are the required courses necessary to meet CDA competencies.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ECE 100	Foundations of Early Childhood Education	2	ECE 130*	Preschool Education with Field Experiences	5
ECE 110	Child Development	3	OR		
ECE 120	Creative Activities	3	ECE 140*	Infant and Toddler Education with Field Experiences	5
	Total Credits	**8**	ECE 240	Administration of Early Childhood Programs	3
			ECE 160	Child Development Associate (CDA) Credential Assessment Preparation	1
				Total Credits	**9**

PROGRAM TOTAL 17 CREDITS

Upon successful completion of the required courses, students earn a Schoolcraft College certificate. To earn the CDA, candidates may then apply to the Council for Early Childhood Professional Recognition. The Council charges an application fee, assigns a representative to assess the candidate and awards this national credential.

** Choose course depending upon the type of CDA Credentials the student is pursuing. Check with the Early Childhood Education and Special Education Depart- ment for more information. Students must successfully pass courses with field experiences with a grade of a 2.5 in order to be eligible to earn credit for the course. Students that do not pass the course at the second attempt may not remain in the program.*

Students in the Early Childhood Education program must adhere to the Code of Ethics of the National Association for the Education of Young Children and the Council for Exceptional Children along with the Early Childhood Education and Special Education Department policies. Early Childhood Education and Special Education Department policies are provided from the department to the student in their field experience courses.

Early Childhood Education Certificate

Schoolcraft program code # 1YC.00031

The Early Childhood Education Certificate program provides an educational foundation for understanding children's development and children's needs. The program emphasizes helping students acquire the knowledge and skills needed to plan developmentally appropriate learning environments, nurturing strategies and activities for children which promote their physical, intellectual, social and emotional growth and well-being.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ECE 100	Foundations of Early Childhood Education	2	ECE 130	Preschool Education with Field Experiences	5
ECE 110	Child Development	3	ECE 230	Classroom Behavior—Understanding Social Competence	3
ECE 120	Creative Activities	3		**Total Credits**	**8**
ECE 180	Child and Family Welfare Services	3			
	Total Credits	**11**			

First Year—Spring Session

ECE 140	Infant and Toddler Education with Field Experiences	5
ECE 240	Administration of Early Childhood Programs	3
	Total Credits	**8**

PROGRAM TOTAL 27 CREDITS

Students in the Early Childhood Education program must adhere to the Code of Ethics of the National Association for the Education of Young Children and the Council for Exceptional Children along with the Early Childhood and Special Education department policies. Prior to the start of field placement hours in ECE 130 and ECE 140 students must present to their instructor the following:

- Michigan Department of Human Services Central Registry Clearance. The Michigan's Central Registry is a list of people who committed child abuse or neglect; as defined by The Child Protection Law.
- Michigan background check based upon requirements from the State of Michigan for Child Care Licensing. Schoolcraft College will complete the I-CHAT background check for each student.
- A current (within one year of their first day of their field experience) TB test with negative results.
- Students who do not pass clearance by the Michigan Department of Human Services, the background check and or the TB required test are not permitted in programs in the Early Childhood and Special Education Department.

Students must successfully pass courses with field experiences with a grade of a 2.5 in order to be eligible to earn credit for the course. Students who do not pass the course at the second attempt may not remain in the program.

Early Childhood Education AAS Degree

Schoolcraft program code # AAS.00020

To work effectively with children, early childhood educators must be sensitive to and understand the developmental stages of children. This curriculum contains theoretical and practical experiences to prepare students to work in early childhood programs in a variety of settings. The required field experiences expose students to best practices in early childhood education.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an Associate in Applied Science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

ECE 100	Foundations of Early Childhood Education	2
ECE 110	Child Development	3
ECE 120	Creative Activities	3
ENG 101	English Composition 1	3
HUM	*Select one*	3-4
	Recommended:	
	Any World Language	
COMA 103	Fundamentals of Speech	
ENG 203	Children's Literature	
	Total Credits	**14-15**

First Year—Winter Semester

ECE 130	Preschool Education with Field Experiences	5
ECE 150	Before and After School Programming for Children	3
ECE 170	Curriculum, Assessment and Technology	3
SPE 220	Early Childhood Special Education	3
PSYCH 153	Human Relations	3
	Total Credits	**17**

Second Year—Fall Semester

ECE 140	Infant and Toddler Education with Field Experiences	5
ECE 180	Child and Family Welfare Services	3
ECE 230	Classroom Behavior—Understanding Social Competence	3
ECE 240	Administration of Early Childhood Programs	3
ENG 102	English Composition 2	3
	Total Credits	**17**

Second Year—Winter Semester

ECE 260	Early Childhood Education Advanced Practical Experiences	4
ECE 250	Literacy and Numerical Thinking	3
ECE 280	Emerging Educator	1
MATH	*Select one*	3-5
Science	*Select one*	3-5
	Total Credits	**14-18**

PROGRAM TOTAL 62-67 CREDITS

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Students in the Early Childhood Education program must adhere to the Code of Ethics of the National Association for the Education of Young Children and the Council for Exceptional Children along with the Early Childhood Education and Special Education Department policies. For field experience courses, students must earn a minimum grade of 2.5 to pass the course. Students have only two attempts at completing ECE 130, ECE 140 and ECE 260. Students who are not successful with the second attempt are not eligible to remain in the program. Early Childhood Education and Special Education Department policies are provided to the student in their field experience courses.

The Children's Center at Schoolcraft College is accredited by the National Association for the Education of Young Children (NAEYC—the foremost authority in the care of children, birth through age eight). The accreditation we earned is held by only 3 percent of centers in Michigan and 7 percent of centers in the United States. The Children's Center is our lab school for some of the early childhood courses with field experiences and observations. For more information about accreditation please contact:

National Association for the Education of Young Children (NAEYC) 1313 L. Street N.W., Suite 500, Washington, DC 2005-4101 1-800-424-2460
www.naeyc.org/accreditation

EDUCATION—ELEMENTARY AND SECONDARY

Credentials

Elementary Education Certificate	24 cr.
Secondary Education Certificate	21 cr.
Liberal Arts Transfer AA, AS, AFA, or AGS Degree	60 cr.
Teacher Education Transfer AA, AS, AFA or AGS Degree	61-68 cr.

Alternate Route to Interim Teacher Certification

The Schoolcraft College Alternate Route to Interim Teacher Certification (ARC) Program is recognized and approved by the Michigan Department of Education. It will provide eligible individuals an opportunity to complete an alternate route program for transitioning from a previous career and/or undergraduate or graduate degree program into teaching. The term "alternate route" refers to a program that is designed especially for individuals who hold a bachelor's degree or higher and who may be allowed to teach full-time while completing approved alternate route teacher preparation requirements. The intention of the program is to enable those who commit their knowledge, skills and preparation to become successful, fully certified classroom teachers through a quality, rigorous alternative route program. Schoolcraft College will recommend their participants for the Interim Certificate upon admission to their program. Following the successful completion of the program, the program completers may be recommended by Schoolcraft for the Michigan Provisional Teaching Certificate, Professional Education Certificate or Interim Occupational Certificate with an endorsement in his/her area of content or occupational specialization.

The coursework in the Alternative Route (ARC) Program is based on both the Interstate Teacher Assessment and Support Consortium–Model Core Teaching Standards (2011) (InTASC) and International Society for Technology in Education (ISTE) standards. The coursework and field experiences are designed to prepare the candidate to make a successful and seamless transition into the classroom as an effective teacher.

Students are admitted to the program in April, with courses being offered May–August. Students who successfully complete the coursework can then arrange for a classroom placement as a certified teacher, under the Michigan Interim Teaching Certificate. Students will be responsible for arranging for their classroom placement. Students will work with a mentor in their building and be involved in continuous professional development for three years, while working as a full time classroom teacher. Candidates will be participating in workshops and seminars during the school year, as well as, completing coursework during the three summers. Following three years of successful teaching and meeting all program requirements, candidates will be eligible to be recommended for the Michigan Provisional Certificate. Students enrolled in the Alternative Route for Interim Teacher Certification Program will be required to maintain an overall 3.0 GPA, with no individual course grade lower than 3.0 and complete all program requirements within five years.

The State of Michigan's admission requirements for the program are:

- Minimum of a bachelor's degree from an accredited college or university
- Minimum grade point average of 3.0 (4.0 point scale)
- Pass the MTTC Professional Readiness Examination (Basic Skills Test) (Results sent to Schoolcraft College)
- Pass the applicable MTTC Subject Area Test(s) (Results sent to Schoolcraft College) or, if applicable, testing through the Michigan Occupational Competency Assessment Center (MOCAC)
- Evidence of current certification in CPR and First Aid
- Criminal history check (Fingerprinting may also be required by some school districts for fieldwork)

Note: With the Michigan Interim Teaching Certificate, candidates will be able to assume full-time classroom teaching positions. While serving as the classroom teacher of record, the candidates will work with assigned peer mentors, attend workshops and professional development conferences and complete prescribed coursework throughout the following three years of the program.

This program requires an application and special admission process. Contact the Associate Dean of Education to complete an application or for additional information at 734 ‑462 ‑4335.

For more information on Michigan Alternative Route to Interim Teacher Certification (MARITC), call 517-335-6615.

For more information on certification, please contact: Michigan Department of Education, 608 W. Allegan Street, P.O. Box 30008, Lansing, MI 48909, 517-373-3324

Elementary Education Certificate

Schoolcraft program code # 1YC.00170

SAMPLE SCHEDULE OF COURSES

First Year—Spring Session: *Intensive Pre-Certification Semester*			**First Year—Summer Session**		
EDUC 101	Introduction to Education	3	EDUC 205	Promoting Learning in a Diverse Society Using Family, School and Community Partnerships	3
EDUC 210	Elementary Instructional Strategies	3	EDUC 110	Child Development	3
EDUC 230	Teaching Literacy in the Elementary Classroom 1	3		**Total Credits**	**6**
EDUC 290	Fieldwork Practicum	2			
	Total Credits	**11**			

Second Year—Summer Session

EDUC 240	Teaching Literacy in the Elementary Classroom 2	3
EDUC 200	Children with Special Needs	3
	Total Credits	**6**

Third Year—Summer Session

EDUC 260	The Professional Educator	1
	Total Credits	**1**

PROGRAM TOTAL 24 CREDITS

Secondary Education Certificate

Schoolcraft program code # 1YC.00171

SAMPLE SCHEDULE OF COURSES

First Year—Spring Session: *Intensive Pre-Certification Semester*

EDUC 101	Introduction to Education	3
EDUC 220	Secondary Instructional Strategies	3
EDUC 250	Teaching Literacy in the Secondary School	3
EDUC 290	Fieldwork Practicum	2
	Total Credits	**11**

First Year—Summer Session

EDUC 205	Promoting Learning in a Diverse Society Using Family, School and Community Partnerships	3
EDUC 110	Child Development	3
	Total Credits	**6**

Second Year—Summer Session

EDUC 200	Children with Special Needs	3
	Total Credits	**3**

Third Year—Summer Session

EDUC 260	The Professional Educator	1
	Total Credits	**1**

PROGRAM TOTAL 21 CREDITS

Teacher Education Transfer AA, AS, AFA, AGS Degree

Schoolcraft program code # AA.00700

The Teacher Education Transfer Program is designed to enable students who wish to become effective elementary or secondary education teachers to begin their professional studies at Schoolcraft and transfer into a teacher education program at a university. The coursework is based on both the Interstate Teacher Assessment and Support Consortium–Model Core Teaching Standards (2011) (InTASC) and International Society for Technology in Education (ISTE) standards.

Students in the Teacher Education Transfer Program who plan to attend a partner university will be able to receive academic advising and pre-transfer assistance from the participating university. Students in the Teacher Education Transfer Program who complete all program requirements will also be eligible to receive an Associate of Arts (AA), Associate of Science (AS), Associate of Fine Arts (AFA), or Associate in General Studies (AGS) degree with an education designation.

The Teacher Education Transfer Program requires:

- Successful completion of the following courses with a minimum GPA of 2.5, with no individual course grade lower than 2.0 (C):
  - EDUC 101* Introduction to Education
  - PSYCH 249 Educational Psychology
  - EDUC 110 Child Development
  - EDUC 205* Promoting Learning in a Diverse Society Using Family, School and Community Partnerships
  - EDUC 200* Children with Special Needs
  - EDUC 270 Instructional Technology
- Overall minimum GPA of 2.5 (minimum of 60 hours)
- Pass all sections of the MTTC Professional Readiness Examination (Basic Skills Test)
- Criminal background check

**Courses requiring fieldwork (Fingerprinting may also be required by some school districts for fieldwork)*

Students may also complete this program with an AS, AGS, or an AFA degree after meeting all general education and degree requirements. Please contact your counselor for details.

Students who are not in the Teacher Education Transfer Program may transfer the course credit to other institutions. Students should review current transfer guides and articulation agreements when planning to transfer credits. The education designation on the transcript is available only to students who are admitted to and complete the requirements of the Teacher Education Transfer Program. All courses that apply to theses degrees must be at the 100 or 200 level.

Please contact the Associate Dean of Education Programs for additional information, 734-462-4335.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

ENG 101	English Composition 1	3
Elective*	Major/Minor Transfer	3
Social Science	*Select one General Education Social Science Course*	3-4
EDUC 101	Introduction to Education	3
Elective*	*Major/Minor Transfer*	3
	Total Credits	**15-16**

First Year—Winter Session

ENG 102	English Composition 2	3
PSYCH 249	Educational Psychology	3
	OR	
EDUC 110	Child Development	3
Social Science**	*Select one General Education Social Science Course*	3-4
Mathematics	*Select one General Education Math Course*	3-4
Humanities**	*Select one General Education Humanities Course*	3-4
	Total Credits	**15-18**

Second Year—Fall Semester

EDUC 205	Promoting Learning in a Diverse Society Using Family, School and Community Partnerships	3
Elective*	*Major/Minor Transfer*	3
EDUC 200	Children with Special Needs	3
Science	*Select one General Education Science Course*	4-5
Humanities**	*Select one General Education Humanities Course*	3-4
	Total Credits	**16-18**

Second Year—Winter Semester

Elective*	*Major/Minor Transfer*	3
Humanities**	*Select one General Education Humanities Course*	3-4
Elective*	*Major/Minor Transfer*	3
Elective*	*Major/Minor Transfer*	3
EDUC 270	Instructional Technology	3
	Total Credits	**15-16**

PROGRAM TOTAL 61-68 CREDITS

Potential courses that may be used toward meeting transfer requirements:

ART 113	Art Education	3
ENG 203	Children's Literature	3
GEOG 105	Earth Science for Elementary Teachers	4
MATH 105	Mathematics for Elementary Teachers 1	4
MATH 106	Mathematics for Elementary Teachers 2	4
MUSIC 107	Music for Elementary Teachers	4
PE 240	Physical Education for Elementary Teachers	3

**Electives in Liberal Arts Courses and Major/Minor Transfer Areas: Course selection may vary based upon the major or minor that is pursued.*
***The MACRAO transfer agreement requires a minimum of 8 credit hours in more than one discipline for both the Social Sciences and Humanities distribution areas.*

This program outline provides the framework for a Teacher Education Transfer Program, but it does not represent a final academic plan for any specific four-year college or university. *Students should consult with their counselor or advisor and the teacher preparation institution to which they are transferring, for details regarding transfer credit for all education courses, general education, and admission application requirements for the specific college/university to which they plan to transfer.*

Students need to be aware that educational programs require a criminal background check. Fingerprinting may also be required by some school districts for fieldwork.

In order to complete the program requirements, students will need to have successfully passed all sections of the MTTC Professional Readiness Examination (Basic Skills Test) and have an overall minimum GPA of 2.5 (minimum of 60 hours), with no individual course grade lower than 2.0 (C).

EDUCATION—SPECIAL EDUCATION

Credentials

Special Needs Para Educator certificate	30 cr.
Special Needs Para Educator AAS degree	61-66 cr.

Major Description

Working as a Para Educator requires persons to be supportive and nurturing while taking a strength-based perspective to match the strengths of each person with special needs. This curriculum contains theoretical and practical experiences designed to prepare students to work in public school special education classrooms, inclusive classrooms and resource rooms, institutional settings, sheltered workshops, job coaching programs, group homes or supported-living programs. Students learn to work effectively as members of professional educational and community based teams that support persons with disabilities.

Students can also transfer credits earned to a bachelor's degree program at a four-year institution.

National Median Salaries for Special Needs Para Educator-related positions *(source: US BLS)*

Special Needs Paraprofessional: $23,640

Teacher Assistant: $23,640

Special Education Teacher: $55,060

Special Needs Para Educator Certificate

Schoolcraft program code # 1YC.00032

The Special Needs Para Educator certificate program provides an educational foundation for understanding neuro-typical and neuro-atypical human development. The program emphasizes a strength-based best practices model in preparing students to work with children and adults with special needs.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
ECE 110	Child Development	3	SPE 135*	Emotional Impairment	3
SPE 100	Children with Special Needs	3	SPE 145**	Special Education Practical Experiences 1	3
SPE 105	Introduction to Developmental Disabilities	3	SPE 210	Methods and Curricula for Persons with Developmental Disabilities	3
SPE 115*	Special Educational Programs and Supported Living	3	SPE 220	Early Childhood Special Education	3
SPE 125*	Learning Disabilities	3	ECE 230	Classroom Behavior—Understanding Social Competence	3
	Total Credits	**15**		**Total Credits**	**15**

PROGRAM TOTAL 30 CREDITS

** These classes are offered on a rotational basis.*

*** Students in the Early Childhood and Special Education programs must adhere to the code of ethics of the National Association for the Education of Young Children and the Council for Exceptional Children along with the Early Childhood and Special Education Department policies. For field experience courses, students must earn a minimum grade of 2.5 to pass the course. Students may only have two attempts at completing SPE 145. Students who are not successful with the second attempt are not eligible to remain in the program. Prior to the start of practicum hours in SPE 145 students must present to their instructor the following:*

- Michigan Department of Human Services Central Registry Clearance. The Michigan's Central Registry is a list of people who committed child abuse or neglect; as defined by The Child Protection Law.
- Michigan background check based upon requirements from the State of Michigan for Child Care Licensing. Schoolcraft College will complete the I-CHAT background check for each student.
- A current (within one year of their first day of their field experience) TB test with negative results.

Special Needs Para Educator AAS Degree

Schoolcraft program code # AAS.00021

Working as a Para Educator requires persons to be supportive and nurturing while taking a strength-based perspective to the strengths of each person with special needs. This curriculum contains theoretical and practical experiences designed to prepare students to work in public school special education classrooms, inclusive classrooms and resource rooms, institutional settings, sheltered workshops, job coaching programs, group homes or supported-living programs. Students learn to work effectively as members of professional educational and community based teams that support persons with disabilities.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ECE 110	Child Development	3	ECE 170	Curriculum, Assessment and Technology	3
SPE 100	Children with Special Needs	3	ECE 180	Child and Family Welfare Services	3
SPE 105	Introduction to Developmental Disabilities	3	SPE 145*	Special Education Practical Experiences 1	3
ENG 101	English Composition 1	3	SPE 220	Early Childhood Special Education	3
HUM	*Select one*	3-4	PSYCH 153	Human Relations	3
	Recommended:			**Total Credits**	**15**
	Any World Language				
COMA 103	Fundamentals of Speech				
ENG 203	Children's Literature				
	Total Credits	**15-16**			

Second Year—Fall Semester			**Second Year—Winter Semester**		
SPE 115	Special Education Programs and Supported Living	3	SPE 210	Methods and Curricula for Persons with Developmental Disabilities	3
SPE 125*	Learning Disabilities	3	SPE 270**	Special Education Practical Experiences 2	3
SPE 135*	Emotional Impairment	3	ECE 230	Classroom Behavior—Understanding Social Competence	3
ECE 120	Creative Activities	3	ECE 280	Emerging Educator	1
ENG 102	English Composition 2	3	MATH	*Select one*	3-5
	Total Credits	**15**	Science	*Select one*	3-5
				Total Credits	**16-20**

PROGRAM TOTAL 61-66 CREDITS

** These classes are offered on a rotational basis.*

*** Students in the Early Childhood and Special Education programs must adhere to the code of ethics of the National Association for the Education of Young Children and the Council for Exceptional Children along with the Early Childhood and Special Education Department policies. For field experience courses, students must earn a minimum grade of 2.5 to pass the course. Students may only have two attempts at completing SPE 145. Students who are not successful with the second attempt are not eligible to remain in the program. Prior to the start of practicum hours in SPE 145 students must present to their instructor the following:*

- Michigan Department of Human Services Central Registry Clearance. The Michigan's Central Registry is a list of people who committed child abuse or neglect; as defined by The Child Protection Law.
- Michigan background check based upon requirements from the State of Michigan for Child Care Licensing. Schoolcraft College will complete the I-CHAT background check for each student.
- A current (within one year of their first day of their field experience) TB test with negative results.

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

ELECTRONIC TECHNOLOGY

Credentials

Electronic Technology skills certificate	16 cr.
Electronic Technology certificate	33-34 cr.
Electronic Technology AAS degree	60-66 cr.

Major Description

Schoolcraft provides students interested in electronics a variety of educational options to increase their opportunities to become an electronics repair professional or an electronics engineering technician.

- The electronic technology skills certificate is designed for students who want to gain the basic skills needed for entry-level jobs in electronics.
- With an electronic technology certificate, students will have a solid foundation for positions such as an electronic repairer that require a thorough understanding of electronic fundamentals. The certificate is also required to apply for entrance into Schoolcraft's biomedical engineering technology associate degree program.
- The associate of applied science in electronic technology gives students a strong background in electronics and the fundamentals of electricity, and opens up positions as an electronics engineering technician where they will be able to work with engineers to design and test computers, electronic devices, appliances, and medical and industrial equipment.

Students gain additional knowledge of microcontrollers, programmable logic controllers and digital and analog circuits in Schoolcraft's labs, while lectures focus on taking measurements and reporting findings in a clear, concise manner.

National Median Salaries for Electronic Technology-related positions *(source: US BLS)*

Electronics Repair: $46,550

Electronics Engineering Technician: $51,820

Electronic Technology Skills Certificate

Schoolcraft program code # CRT.00320

The electronic technology certificate is intended for students wishing to gain the basic skills needed for entry-level jobs in electronics. Completion of the skills certificate permits the student to take electrical measurements, understand DC and AC signals, and apply solid-state troubleshooting tech niques used in modern jobs involving electronics.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ELECT 131	Basic Measurement and Reporting Skills	3	ELECT 138	AC Circuits and Mathematical Modeling	5
ELECT 137	DC Circuits and Mathematical Modeling	5	ELECT 139	Diodes and Transistors	3
	Total Credits	**8**		**Total Credits**	**8**

PROGRAM TOTAL 16 CREDITS

Electronic Technology Certificate

Schoolcraft program code # 1YC.00125

The certificate for electronics provides the student with a solid foundation for many jobs that require a thorough understanding of electronic fundamentals. Completion of the certificate program also offers the student the opportunity to pursue advanced technical credentials in healthcare, in manufacturing, or in computer systems.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ELECT 131	Basic Measurement and Reporting Skills	3	ELECT 138	AC Circuits and Mathematical Modeling	5
ELECT 137	DC Circuits and Mathematical Modeling	5	ELECT 139	Diodes and Transistors	3
ELECT 180	LabVIEW Programming CORE 1 and 2	5		**Total Credits**	**8**
Science	*Select one*	4-5			
BIOL 105	Basic Human Anatomy and Physiology*				
CHEM 111	General Chemistry 1				
PHYS 123	Applied Physics				
	Total Credits	**17-18**			

First Year—Spring/Summer Session

ELECT 215	Operational Amplifiers and Linear Integrated Circuits	4
ELECT 219	Digital Logic Circuits	4
	Total Credits	**8**

PROGRAM TOTAL 33-34 CREDITS

**BIOL 105 is required for the BMET program internship sequence*

Electronic Technology AAS Degree

Schoolcraft program code # AAS.00120

This electronics program is designed to give students a strong background in the fundamentals of electricity, electronic devices and basic circuits (digital and linear). The curriculum includes laboratory demonstration of the principles taught in class affording practical experience in fabrication, instrumentation and presentation.

The program is not directly aimed at specific products. With the multiplicity of equipment presently in use and the rapid advance and change in technology, the department stresses the development of a broad background that will enable students to find employment and be able to further their skills in a diversified number of industries.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

ELECT 131	Basic Measurement and Reporting Skills	3	ELECT 138	AC Circuits and Mathematical Modeling	5
ELECT 137	DC Circuits and Mathematical Modeling	5	ELECT 139	Diodes and Transistors	3
ENG 101	English Composition 1	3	ELECT 180	LabVIEW Programming CORE 1 and 2	5
Science	*Select one*	4-5		**Total Credits**	**13**
BIOL 105	Basic Human Anatomy and Physiology				
CHEM 111	General Chemistry 1				
PHYS 123	Applied Physics				
	Total Credits	**15-16**			

First Year—Winter Semester

First Year—Spring/Summer Session

ELECT 215	Operational Amplifiers and Linear Integrated Circuits	4
ELECT 219	Digital Logic Circuits	4
	Total Credits	**8**

Second Year—Fall Semester

ELECT 144	Introduction to Microcontrollers	3	ELECT 251	Programmable Logic and Industrial Controls	4
ELECT 218	AC/DC Motors	3	Elective*	*Select from list*	3-4
Social Science	*Select General Education Social Science course(s)*	3-4	MATH 102	Technical Mathematics	4
PSYCH 153	Human Relations (recommended)		Humanities	*Select General Education Humanities course(s)*	1-4
English	*Select one*	3	COMA 103	Fundamentals of Speech (recommended)	
ENG 102	English Composition 2			**Total Credits**	**12-16**
ENG 116	Technical Writing				
	Total Credits	**12-13**			

Second Year—Winter Semester

PROGRAM TOTAL 60-66 CREDITS

**Number of credits may vary depending on the course selection.*

Electives

BMET 125	Laser Safety Concepts	3
CIS 171	Introduction to Networking	3
CIS 235	Managing and Troubleshooting PCs	3
COMPS 124	Introduction to Personal Computers and Software	3
COMPS 126	Technical Programming	3
ELECT 133	Introduction to Battery Technology	3
ELECT 145	Fluid Power	4
ELECT 228	Electronic Troubleshooting	3
ELECT 252	Programmable Logic System Design	4
MET 103	Introduction to Materials Science	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

EMERGENCY MEDICAL TECHNOLOGY

Credentials

Emergency Medical Technician skills certificate	19 cr.
Paramedic certificate	31.5 cr.
Paramedic AAS degree	66.5-67.5 cr.

Major Description

Emergency Medical Technicians and Paramedics are on the front-line of emergency medical care, and Schoolcraft can help students prepare for a career in this fast-paced profession by earning either a certificate or an associate of applied science degree.

The Emergency Medical Technician skills certificate prepares students for employment as a pre-hospital Emergency Medical Technician, while the Paramedic certificate and associate in applied science degree enables students to qualify for positions as an advanced emergency provider. The rigorous programs include a combination of lecture, laboratory, and clinical and field internship experience to give students a solid foundation in the field of emergency medical services. Every course is approved by Michigan Department of Health & Human Services Bureau of EMS, Trauma, & Preparedness, EMS Section.

Students successfully completing the program requirements will be eligible to take the National Registry of EMT written and practical exams. Those who successfully pass the credentialing exams will be eligible to apply for state licensure.

Credits earned in the certificate programs may count toward a Schoolcraft AAS degree and transfer toward a bachelor's degree at a four-year college or university.

National Median Salaries for Emergency Medical Technology-related positions *(source: US BLS);*

EMT or Paramedic: $31, 020

Emergency Medical Technology: EMT Skills Certificate

Schoolcraft program code # CRT.00324

The emergency medical technology skills certificate prepares students for employment as pre-hospital emergency medical providers. A combination of lecture, laboratory, and clinical and field experience will be utilized to fulfill all training requirements.

All courses are approved by the Michigan Department of Health & Human Services Bureau of EMS, Trauma, & Preparedness, EMS Section. Students successfully completing the program requirements will be eligible to take the National Registry of EMT Paramedic written and practical exams. Those who successfully pass the credentialing exams will be eligible to apply for state licensure.

Students will be evaluated in the following core competency areas: didactic, practical, clinical, and field internship performance. Practical skills are graded on a pass/fail basis, and students will be required to pass all skills examinations to successfully complete the program. All clinical and field internship rotations will be graded on attendance, attitude and skills performance which will be evaluated by field mentors, clinical coordinator and/or the course instructor. All students will be required to hold liability insurance which is valid for one year

The EMT skills certificate provides students with basic knowledge and applicable skills for a career in the field of emergency medical service. This skill certificate is required for entry into the paramedic certificate program. Currently licensed EMTs may be eligible for prior learning credit. Please contact a counselor for more information.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
EMT 115	Emergency Medical Technology–Basic	10	BIOL 236	Human Anatomy and Physiology	5
BIOL 101	General Biology	4		**Total Credits**	**5**
	Total Credits	**14**			

PROGRAM TOTAL 19 CREDITS

Emergency Medical Technology: Paramedic Certificate

Schoolcraft program code # 1YC.00024

The emergency medical technology paramedic certificate program prepares students for employment as pre-hospital advanced emergency medical providers. A combination of lecture, laboratory, and clinical and field experience will be utilized to fulfill all training requirements.

All courses are approved by the Michigan Department of Health & Human Services Bureau of EMS, Trauma, & Preparedness, EMS Section. Students successfully completing the program requirements will be eligible to take the National Registry of EMT Paramedic written and practical exams. Those who successfully pass the credentialing exams will be eligible to apply for state licensure.

Students will be evaluated in the following core competency areas: didactic, practical, clinical, and field internship performance. Practical skills are graded on a pass/fail basis, and students will be required to pass all skills examinations to successfully complete the program. All clinical and field internship rotations will be graded on attendance, attitude and skills performance which will be evaluated by field mentors, clinical coordinator and/or the course instructor. All students will be required to hold liability insurance which is valid for one year

All courses are not offered each semester. Students should work with an academic advisor or counselor to set up a schedule that will work for them. The special nature of the emergency medical technology coursework precludes concurrent enrollment in the courses for this certificate, thus necessitating additional time to complete the requirements for this certificate. Historically, individuals who take all four courses have done so over a two-year period.

The paramedic certificate program requires the EMT skills certificate for entry. Currently licensed EMTs may be eligible for prior learning credit. Please contact a counselor for more information.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

EMT 210	Paramedic Technology 1	10	EMT 220	Paramedic Technology 2	10.5
	Total Credits	**10**		**Total Credits**	**10.5**

First Year—Spring Session **Second Year—Fall Semester**

EMT 230	Paramedic Technology 3	9	EMT 290	Paramedic Field Internship	2
	Total Credits	**9**		**Total Credits**	**2**

PROGRAM TOTAL 31.5 CREDITS

Emergency Medical Technology: Paramedic AAS Degree

Schoolcraft program code # AAS.00250

The emergency medical technology paramedic program prepares students for employment as advanced emergency providers. A combination of lecture, laboratory, clinical and field experience will be utilized to fulfill all training requirements.

All courses are approved by the Michigan Department of Health & Human Services Bureau of EMS, Trauma, & Preparedness, EMS Section. Students successfully completing the program requirements will be eligible to take the National Registry of EMT Paramedic written and practical exams. Those who successfully pass the credentialing exams will be eligible to apply for state licensure.

Students will be evaluated in the following core competency areas: didactic, practical, clinical, and field internship performance. Practical skills are graded on a pass/fail basis, and students will be required to pass all skills examinations to successfully complete the program. All clinical and field internship rotations will be graded on attendance, attitude and skills performance which will be evaluated by field mentors, clinical coordinator and/or the course instructor. All students will be required to hold liability insurance which is valid for one year.

Students are admitted twice a year into the paramedic program; once in the fall and again in the winter semesters. All emergency medical technology courses must be taken in sequence.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Currently licensed EMTs and Paramedics may be eligible for prior learning credit. Please contact a counselor for more information.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester **First Year—Winter Semester**

BIOL 101	General Biology	4	BIOL 236	Human Anatomy and Physiology	5
EMT 115	Emergency Medical Technology—Basic	10	ENG 100	Communication Skills	3
	Total Credits	**14**	HIT 100	Introduction to Medical Terminology	2
				Total Credits	**10**

First Year—Spring Session **First Year—Summer Session**

General Education	Mathematics *Recommended MATH 101 or 102*	3-4	CIS 105*	Computer Orientation	1
PSYCH 153	Human Relations	3	ENG 116	Technical Writing	3
	Total Credits	**6-7**	HUM 106	Introduction to Art and Music	1
				Total Credits	**5**

Second Year—Fall Semester **Second Year—Winter Semester**

EMT 210	Paramedic Technology 1	10	EMT 220	Paramedic Technology 2	10.5
	Total Credits	**10**		**Total Credits**	**10.5**

Second Year—Spring Session **Third Year—Fall Semester**

EMT 230	Paramedic Technology 3	9	EMT 290	Paramedic Internship	2
	Total Credits	**9**		**Total Credits**	**2**

PROGRAM TOTAL 66.5 – 67.5 CREDITS

Electives (Optional)

HIT 114	Pharmacology for Health Professionals	2
MA 115	Phlebotomy	3

**CIS 105 may be waived if student has successfully completed a high school computer course or equivalent within the past five years.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

For more information on certification, please contact:

Michigan Department of Health & Human Services
Bureau of EMS Trauma, & Preparedness, EMS Section
Capitol View Building,6th Floor
201 Townsend Street
Lansing, Michigan 48913
517-335-1825
goddet@michigan.gov
www.michigan.gov/ems

ENGLISH AS A SECOND LANGUAGE

Major Description

At Schoolcraft we believe that everyone should have the opportunity to pursue their educational goals. For many individuals, building a strong foundation in the English language is the first step.

In our English as a Second Language courses, you will develop strong communication, speaking, listening, reading and writing skills in the English language.

All of the English as a Second Language courses require a placement test prior to registration. Successfully passing the ESL Accuplacer Exam is required to exit the ESL program.

This program does not result in a credential, but rather prepares students to be college-ready and to build academic success. Schoolcraft's ESL program is a SEVP recognized and approved English Language Learning/Bridge Program for F-1 students.

English as a Second Language (ESL) Program

Schoolcraft program code: Aligned with the student's major program of study

The courses in the English as a Second Language (ESL) program prepare students for study in American college settings and also teach the international student about American culture and the English language for daily living and communication with native speakers. The instruction includes:

- English and vocabulary development
- Academic writing activities: forms, letters, compositions, summaries, essay exams, and research papers
- Speaking activities: discussions, oral reports, and formal speeches
- Listening skills: lectures, video and audio tapes
- Reading and grammar for college level academic purposes
- Test preparation and note taking skills
- Computer-assisted instruction

Instruction is highly individualized to meet individual learner goals. Classes incorporate learning in the language labs, using computer-assisted instruction and other interactive instructional materials. Instructors work with students individually and in small groups to maximize the rate of student progress. In advanced levels of the program, students will complement the ESL courses with appropriate academic college coursework.

The English as a Second Language program consists of five levels, each focused on the following three content areas:

- Grammar and Writing
- Reading and Vocabulary
- Speaking and Listening

Students are initially placed into the appropriate level, based on their ESL Accuplacer Exam scores. Therefore, not all classes may be required.

In addition to the required coursework within the program, students may choose to take an elective course to enhance and extend their learning of the English language. Students interested in selecting an elective course will be expected to meet all pre-requisites.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

			First Year—Winter Semester		
ESL 060	Reading and Vocabulary 1	4	ESL 070	Reading and Vocabulary 2	4
ESL 064	Listening and Speaking 1	4	ESL 074	Listening and Speaking 2	4
ESL 067	Grammar and Writing 1	4	ESL 077	Grammar and Writing 2	4
	Total Credits	**12**		**Total Credits**	**12**

Second Year—Fall Semester

			Second Year—Winter Semester		
ESL 080	Reading and Vocabulary 3	4	ESL 110	Reading and Vocabulary 4	4
ESL 084	Listening and Speaking 3	4	ESL 114	Listening and Speaking 4	4
ESL 087	Grammar and Writing 3	4	ESL 117	Grammar and Writing 4	4
Elective	*Select one (optional)*	3	Elective	*Select one (optional)*	3
ESL 078	English for Business Purposes		ESL 078	English for Business Purposes	
ESL 079	American English Pronunciation		ESL 079	American English Pronunciation	
	Total Credits	**11-15**		**Total Credits**	**11-15**

Third Year— Fall Semester

ESL 130	**ESL Capstone Course**	4
Electives	***Selected entry level courses (optional)***	8
	Total Credits	**4-12**

PROGRAM TOTAL 50-66 CREDITS

NOTE: Courses must be at a 100-level or higher to be used toward completion of any academic credential or program.

Students are required to have a final course grade of 70% (2.0) in order to successfully complete each course and advance to the next level. Students will take the ESL Accuplacer Exam at the conclusion of Levels 2, 3, and 4, in order to assist in appropriate placement and completion of the ESL program.

This program does not result in a credential, but rather prepares students to be college-ready and to build academic success.

Students seeking additional information regarding the program may contact the international student academic advisor at 734-462-4400, press #1, and then extension 5203. F-1 students seeking additional information regarding the program may contact the International Student Coordinator at SCISQ@SCHOOLCRAFT.EDU.

ENVIRONMENTAL STUDIES

Credentials

Environmental Science Technician certificate	31 cr.
Environmental Studies AAS degree	60 cr.

Major Description

With more focus on "green" energy, technology and sustainability, Schoolcraft's environmental studies program prepares students for entry into this fast-growing field. Through the study of the environment, related sciences, communication and geographic information systems, students can pursue either an environmental science technician certificate or an associate in applied science degree. Students can also complete a spring co-op experience in the final semester of the certificate and degree program to apply the knowledge and skills learned at Schoolcraft in a real-world situation.

National Median Salaries for Environmental Studies-related positions: *(source: US BLS)*

Environment Science Technician: $41,240

Environmental Science Technician Certificate

Schoolcraft program code # 1YC.00276

Environmental science technicians provide technical assistance to engineers and scientists by performing tasks such as sample collection, laboratory tests, monitoring and data management. The environmental science technician applies scientific and technical skills and knowledge to specific tasks. Technicians have strong written and oral communication skills, computer skills and practical hands on training in the field and laboratory. Technicians can problem solve quickly and apply their classroom knowledge to real world situations. The environmental science technician program provides students with the necessary background to be successful technicians.

Upon completion of this certificate program, it is highly recommended that students complete the 40 hour Hazardous Waste Operations and Emergency Response (Hazwoper) training from any certified location.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

GEOG 135	Earth Systems	4
MATH 113	Intermediate Algebra for College Students	4
GEOG 225	Introduction to Geographic Information Systems—GIS	4
	Total Credits	**12**

First Year—Winter Semester

ENVR 107	Soil Mechanics	4
ENVR 206	Environmental Law	3
GEOG 212	Environmental Science	3
GEOG 217	Water Resources	3
ENVR 235	Geographic Methods Applied to Environmental Problems	3
	Total Credits	**16**

First Year—Spring Session

ENVR 232	Environmental Field Experience	3
	Total Credits	**3**

PROGRAM TOTAL 31 CREDITS

Environmental Studies AAS Degree

Schoolcraft program code # AAS.00176

The environmental studies program is an interdisciplinary program that concentrates on the identification of environmental problems and the analysis of the complex interactions of human populations with the earth. The program includes discussions of technology and how it impacts the environment. Program courses incorporate the concept of sustainable development, a form of economic development that encourages economic growth while at the same time improving quality of life and preserving the environment. The capstone course is a Field Experience course where students apply classroom knowledge to a field environmental issue. Students in the environmental studies program can transfer to a four-year environmental studies or environmental science program, or complete an environmental technician certificate.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

ENG 101	English Composition 1	3
COMA 103	Fundamentals of Speech	3
MATH 113	Intermediate Algebra for College Students	4
GEOG 135	Earth Systems	4
	Total Credits	**14**

First Year—Winter Semester

ENG 102	English Composition 2	3
GEOG 212	Environmental Science	3
ENVR 107	Soil Mechanics	4
ART 115	Art History 1	4
	Total Credits	**14**

Second Year—Fall Semester

POLS 105	Survey of American Government	3
CIS 225	Database Management Systems	3
ENVR 230	Energy Resources	3
GEOG 225	Introduction to Geographic Information Systems—GIS	4
	Total Credits	**13**

Second Year—Winter Semester

CHEM 111	General Chemistry 1	4
GEOG 217	Water Resources	3
ENVR 206	Environmental Law	3
GEOG 203	Weather and Climate	3
ENVR 235	Geographic Methods Applied to Environmental Problems	3
	Total Credits	**16**

Second Year—Spring Session

ENVR 232	Field Experience	3
	Total Credits	**3**

PROGRAM TOTAL 60 CREDITS

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

FIRE TECHNOLOGY

Credentials

Fire Fighter Technology certificate	30 cr.
Fire Technology AAS degree	66 cr.
Fire Technology with Academy AAS degree	66 cr.

Major Description

Today's fire fighter has a wide range of responsibilities, from fighting fires and rescuing victims, to salvaging building contents and providing medical services at the scene of a traffic accident or other emergency. Schoolcraft offers three educational options to help students become part of this field. Our certificate program provides career training for fire protection technicians. It is designed for students who are currently employed by fire departments recognized by the Michigan Fire Marshal and volunteer in recognized fire districts or are currently seeking employment. The program works in cooperation with the Michigan Fire Fighters Training Council and can prepare you to take the state exam for certification as an entry-level fire fighter.

The fire technology associate in applied science degree is geared towards students wishing to attend part-time and combines lectures and hands-on activities that prepare them to respond in a variety of emergencies. Our fire technology with academy degree program contains the same courses, but is designed for students who want to attend Schoolcraft full-time.

All programs enable students to participate in courses that utilize Schoolcraft's state-of-the-art Public Safety Training Complex. It includes a four-story burn tower that simulates a variety of firefighting and rescue situations, including high-angle approaches.

Credits may also transfer toward a bachelor's degree at a four-year college or university.

National Median Salaries for Fire Technology-related positions: *(source USBLS)*

Fire Fighter: $45,250

Fire Fighter Technology Certificate

Schoolcraft program code # 1YC.00149

The fire fighter technology program provides career training for fire protection technicians. The program is offered in cooperation with the Michigan Fire Fighters Training Council and focuses on meeting the needs of fire service personnel. It is designed for students who are currently employed by Michigan Fire Marshal/recognized fire departments, currently seeking employment and/or volunteer in recognized fire districts. All courses meet the state-mandated requirements for preparing students to take the state exam for certification as entry-level fire fighters.

Fire Fighter 1, 2 and/or Academy courses require students to attain an average of 70 percent or better on test scores and to score at least 70 percent on their final exam to receive a passing grade of 2.0. The Emergency Medical Technology—Basic course requires an average of 80 percent on tests and an 80 percent on the final for a grade of 2.7. Students achieving an 80 percent or higher in Emergency Medical Technology—Basic course will receive a certificate of completion and be eligible to test for State licensure. Practical skills in both areas must be passed at stated proficiency levels to successfully complete each course and be recommended for the state certification exams.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

Contact the Fire Technology office at 734-462-4305 for additional information.

First Year—Fall Semester

FIRE 112	Fire Fighter 1—Basic Fire Suppression	10	FIRE 119	Fire Fighter 2—Advanced Fire Suppression	10
	Total Credits	**10**		**Total Credits**	**10**

First Year—Spring Session

EMT 115	Emergency Medical Technology—Basic	10
	Total Credits	**10**

ALTERNATE

First Year—Fall Semester

FIRE 124	Fire Academy	20	EMT 115	Emergency Medical Technology—Basic	10
	Total Credits	**20**		**Total Credits**	**10**

PROGRAM TOTAL 30 CREDITS

The Fire Technology Fire Fighter 1, 2 and fire academy programs are certified by the Michigan Office of Fire Fighter Training. For more information regarding certification please contact: Bureau of Fire Services/OFFT PO Box 30700, Lansing, MI 48909 • 616-447-2689 | www.michigan.gov

Fire Technology AAS Degree

Schoolcraft program code # AAS.00177

Recognizing the need for more highly skilled fire fighters, many municipalities now require additional education for their employees. The curriculum developed for the associate in applied science degree program combines lecture with hands-on activities to prepare the student to respond to a variety of emergencies. Specialists in the field provide valuable input on both content and methodology.

The fire technology associate degree program is designed for students who wish to attend part time. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Contact the Fire Technology office at 734-462-4305 for additional information.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

FIRE 112	Fire Fighter 1—Basic Fire Suppression	10	FIRE 119	Fire Fighter 2—Advanced Fire Suppression	10
ENG 100	Communication Skills	3	BIOL 101	General Biology	4
MATH 101	Business Mathematics	3	PE 202	Lifestyle Fitness—Wellness	2
	Total Credits	**16**		**Total Credits**	**16**

First Year—Spring/Summer Session

FIRE 125	Building Construction for the Fire Service	3
HUM 106	Introduction to Art and Music	1
	Total Credits	**4**

Second Year—Fall Semester

Second Year—Winter Semester

ENG 116	Technical Writing	3	FIRE 128	Fire Fighting—Hydraulics and Water Supply	4
EMT 115	Emergency Medical Technology—Basic	10	PSYCH 153	Human Relations	3
FIRE 130	Fire Fighting—Tactics and Strategy	3	FIRE 200	Fire and Arson Investigation	4
	Total Credits	**16**	Elective	*Select from list*	3
				Total Credits	**14**

PROGRAM TOTAL 66 CREDITS

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor.

Number of credits may vary depending on the course selection.

Electives

FIRE 135	Fire Protection Systems	3
FIRE 205	Fire Department Organization and Administration	3
FIRE 207	Fire Company Officer	3
BIOL 236	Human Anatomy and Physiology	5

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor.

Fire Technology AAS Degree with Academy

Schoolcraft program code # AAS.00177

The fire technology associate degree with academy is designed for students who wish to attend full time.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Contact the Fire Technology office at 734-462-4305 for additional information.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

First Year—Winter Semester

FIRE 124	Fire Academy	20	ENG 100	Communication Skills	3
	Total Credits	**20**	MATH 101	Business Mathematics	3
			FIRE 200	Fire and Arson Investigation	4
			BIOL 101	General Biology	4
				Total Credits	**14**

First Year—Spring/Summer Session

FIRE 125	Building Construction for the Fire Service	3
HUM 106	Introduction to Art and Music	1
	Total Credits	**4**

Second Year—Fall Semester

Second Year—Winter Semester

ENG 116	Technical Writing	3	FIRE 128	Fire Fighting—Hydraulics and Water Supply	4
EMT 115	Emergency Medical Technology—Basic	10	PSYCH 153	Human Relations	3
FIRE 130	Fire Fighting—Tactics and Strategy	3	PE 202	Lifestyle Fitness—Wellness	2
	Total Credits	**16**	Elective	*Select from list*	3 – 5*
				Total Credits	**12 - 17**

PROGRAM TOTAL 66 CREDITS

**Number of credits may vary depending on the course selection.*

Electives

FIRE 135	Fire Protection Systems	3
FIRE 205	Fire Department Organization and Administration	3
FIRE 207	Fire Company Officer	3
BIOL 236	Human Anatomy and Physiology	5

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor.

HEALTH INFORMATION TECHNOLOGY

Credentials

Health—Coding Specialist certificate	39 cr.
Health Information Technology AAS degree	67 cr.

Major Description

As virtually every medical care facility has moved to electronic medical record keeping, the need for health information technicians responsible for healthcare data in a variety of formats has become even more important. At Schoolcraft, students can earn either a health coding specialist certificate or health information technology associate of applied science degree to improve their opportunities to qualify for a position in this rapidly changing field. At Schoolcraft, our faculty is trained in the latest technology, along with state and federal legislation medical recordkeeping standards. Schoolcraft's Health Information Technology Associate Degree Program is nationally accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). Students will enjoy a combination of classroom, laboratory and off-campus experiences in a variety of healthcare facilities with supervised professional practice assignments to expand their learning opportunities.

- The coding specialist certificate prepares students to review and analyze health records to identify relevant diagnoses and procedures for patient services, translating diagnostic and procedural phrases utilized by healthcare providers into coded form.
- Associate of applied science degree graduates are eligible to take the Registered Health Information Technician examination.
- A minimum grade of 2.0 is required in all classes and full and part-time programs are available.
- The program has transfer agreements with many state universities.

National Median Salaries for Health Information Technology-related positions *(source: US BLS)*

Health Record Technicians: $37, 110

Health: Coding Specialist Certificate

Schoolcraft program code # 1YC.00240

The coding specialist program will prepare a student to review and analyze health records to identify relevant diagnoses and procedures for patient services in the inpatient, ambulatory and/or ancillary setting. The student will practice translating diagnostic and procedural phrases utilized by healthcare providers into coded form.

In the program, students apply the following skills:

- Coding of inpatient diagnoses using International Classification of Diseases 10th Revision, Clinical Modification (ICD-10-CM) and inpatient procedures using the International Classification of Diseases 10th Revision, Procedure Coding System (ICD-10-PCS).
- Coding of ambulatory setting procedures and services using Current Procedural Terminology (CPT).
- Reading and interpreting health record documentation to identify all diagnoses and procedures that affect the current inpatient stay/outpatient encounter visit.
- Applying approved coding guidelines to assign and sequence the correct diagnosis; applying procedure codes for hospital inpatient and outpatient services.

A minimum grade of 2.0 is required for progression to the next health information technology course. A minimum grade of 2.0 is required for the basic science course and basic computer course.

The coder can be employed in hospital departments such as health information services (medical records), quality management, professional fee services, radiology, emergency room, outpatient/ambulatory surgery, ancillary services and specialty physician clinics.

Coding specialists also work as independent contractors, consultants and trainers as well as for insurance companies, government agencies, health maintenance organizations and other facilities involved with the healthcare reimbursement process.

The curriculum in the coding specialist program will allow the student to select the health information technology associate degree program as a career path. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. The coding specialist certificate may be completed on a full-time or part-time basis. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

BIOL 236*	Human Anatomy and Physiology	5
HIT 104	Medical Terminology	4
CIS 120	Software Applications	3
	Total Credits	**12**

First Year—Fall Semester

HIT 120	Foundations of Health Information Management	3
HIT 118	Human Diseases	4
HIT 114	Pharmacology for Health Professionals	2
HIT 117	ICD-10-CM/PCS	3
HIT 222	Basic Ambulatory Coding	3
	Total Credits	**15**

First Year—Winter Semester

HIT 235	Intermediate ICD-10-CM/PCS	3
HIT 234	Intermediate Ambulatory Coding	3
HIT 236	ICD Coding Practicum	2
HIT 231	Ambulatory Coding Practicum	2
HIT 240	Healthcare Reimbursement Methodologies	2
	Total Credits	**12**

PROGRAM TOTAL 39 CREDITS

** Students desiring transfer credit should substitute BIOL 237 & BIOL 238. Please review and follow all course prerequisites.*

All courses may be applied toward the Associate of General Studies degree.

Health Information Technology AAS Degree

Schoolcraft program code # AAS.00153

The health information technology program will prepare the student to be a health information technician. The technician is responsible for performing tasks related to the use, analysis, validation, presentation, abstracting, coding, storage, security, retrieval, quality measurement and control of healthcare data in paper-based, hybrid and/or electronic health record systems.

The program coordinates classroom, laboratory and off-campus experiences in a variety of healthcare facilities, such as acute care hospitals, ambulatory care centers, mental health facilities and other health-related facilities. The off-campus activities include supervised, professional practice assignments. The student gains experience in applying knowledge to technical procedures in health information systems.

The health information technician is detail oriented and recognizes the business aspects of healthcare. The technician will have a strong interest in activities, such as assisting medical staff in evaluating the quality of healthcare, protecting the privacy and confidentiality of patient information and utilizing healthcare data.

Health information technology courses should be taken in accordance with prerequisites; a minimum grade of 2.0 in each course is required.

Graduates are eligible to take the Registered Health Information Technician (RHIT) examination. The program is designed for the full-time or part-time student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

BIOL 236*	Human Anatomy and Physiology	5
HIT 104	Medical Terminology	4
CIS 120	Software Applications	3
	Total Credits	**12**

First Year—Fall Semester

HIT 118	Human Diseases	4
HIT 114	Pharmacology for Health Professionals	2
HIT 120	Foundations of Health Information Management	3
ENG 101	English Composition 1	3
MATH 101	Business Mathematics	3
	Total Credits	**15**

First Year—Winter Semester

HIT 130	Legal Aspects of Health Information	3
HIT 158	Clinical Affiliation	2
HIT 117	ICD-10-CM/PCS	3
PSYCH 153	Human Relations	3
English	*Select one*	3
ENG 102***	English Composition 2	
ENG 106	Business English	
	Total Credits	**14**

Second Year—Fall Semester

HIT 210	Healthcare Statistics for Health Information Management	3
HIT 224	Quality Management in Healthcare	2
HIT 222	Basic Ambulatory Coding	3
HIT 232	Computer Applications in Healthcare	2
HIT 255	Health Information Technology Practicum	2
HUM 106	Introduction to Art and Music	1
	Total Credits	**13**

Second Year—Winter Semester

HIT 240	Healthcare Reimbursement Methodologies	2
HIT 242	Organization and Management	3
HIT 235	Intermediate ICD-10-CM/PCS	3
HIT 234	Intermediate Ambulatory Coding	3
HIT 256**	Clinical Affiliation 2	2
	Total Credits	**13**

PROGRAM TOTAL 67 CREDITS

Elective (Optional)

HIT 213	Health Information Technology Seminar	1
HIT 236**	ICD Coding Practicum	2
HIT 231**	Ambulatory Coding Practicum	2

** Students desiring transfer credit should substitute BIOL 237 & BIOL 238. Please review and follow all course prerequisites.*

***Contact HIT faculty to consider substitution.*

**** Students desiring transfer credit should take ENG 102.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

The Associate Degree Program in Health Information Technology at Schoolcraft College is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM).

For additional information contact:

CAHIIM
233 N. Michigan Ave. 21st Floor
Chicago, Illinois 60611-5800

info@cahiim.org
www.cahiim.org
312-233-1100

HOMELAND SECURITY

Credentials

Homeland Security AAS Degree	62 cr.

Major Description

Homeland security personnel help secure U.S. borders, airports, seaports and waterways. They also research and develop the latest security technologies, respond to natural disasters or terrorist assaults and analyze intelligence reports to help protect the homeland from threats.

Schoolcraft's homeland security associate in applied science degree provides students the educational foundation of private and homeland security knowledge to prepare for transfer to a four-year institution with classes in criminal justice, communications and emergency management.

National Median Salaries for Homeland Security-related positions *(source: US BLS)*

Customs Officer: $55,270

Protective Service Worker: $36,620

Senior Security Guard: $42,560

Security Coordinator: $85,116 *(Salary.com)*

Homeland Security AAS Degree

Schoolcraft program code # AAS.00252

Since September 11, 2001, the security industry has expanded rapidly. The United States Department of Homeland Security employs more than 180,000 individuals. Coupled with that, the private security industry employs nearly 1.5 million security personnel. The homeland security degree pro- gram is focused on providing students with a foundation of private and homeland security knowledge to build upon as a transfer to a specialty degree. The objectives of the homeland security associate degree program are to upgrade personnel employed in the security industry and to prepare students for full-time employment in this field.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Contact the Public Safety Education office at 734-462-4747 for more information.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

CJ 102	Organization and Administration of Law Enforcement Agencies	3	MATH 101	Business Mathematics	3
HS 101	Introduction to Homeland Security	3	English	*Select one*	3
English	*Select one*	3	ENG 116	Technical Writing	
ENG 100	Communication Skills		ENG 102	English Composition 2	
ENG 101	English Composition 1		CJ 104	Introduction to Security	3
POLS 105	Survey of American Government	3	CJ 113	Introduction to Criminal Justice System	3
PSYCH 153	Human Relations	3	HS 102	Understanding Terrorism	3
	Total Credits	**15**		**Total Credits**	**15**

First Year—Winter Semester

Second Year—Fall Semester

BIOL 103	Health Education	3	CIS 115	Introduction to Computer Based Systems	3
CJ 201	Criminal Investigation	3	CJ 211	Criminal Law and Procedures	3
HS 103	Transportation and Border Security	3	HS 201	Organizational and Facility Security	3
HS 202	Introduction to Emergency Management	3	HS 203	Intelligence Analysis and Security Management	3
SOC 201	Principles of Sociology	3	Humanities	*Select any General Education Humanities course* *Any 100 or 200 World Language course (recommended)*	4
	Total Credits	**15**		**Total Credits**	**16**

Second Year—Winter Semester

PROGRAM TOTAL 62 CREDITS

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

MANUFACTURING

Credentials

Advanced Manufacturing skills certificate	18 cr.
Advanced Manufacturing Certificate	31 cr.
Advanced Manufacturing AAS Degree	60-67 cr.

Major Description

Today's manufacturing professionals need to understand the fundamentals of production and technology while using critical thinking skills to solve problems and focus on quality and efficiency. Schoolcraft's manufacturing program exposes students to manufacturing processes, materials, methods of production and quality systems and tools in three areas of study:

- The advanced manufacturing skills certificate introduces students to the skills and techniques in manufacturing needed for employment in today's highly technical manufacturing environments.
- With the advanced manufacturing certificate, students new to manufacturing and those with experience will learn the most current manufacturing technology and techniques.
- The associate of applied science in advanced manufacturing gives students the know-how to program CNC machines, or work as a production manager or quality technician.

National Median Salaries for Manufacturing-related positions *(source: US BLS)*

Production Manager: $89,190 CNC Programmer: $44,160

QA Specialist: $34,460

Advanced Manufacturing Skills Certificate

Schoolcraft program code # CRT.00337

The advanced manufacturing skills certificate introduces learners to advanced skills and techniques in manufacturing. It provides the basic skills needed for employment in today's highly technical manufacturing environments. These classes all apply to the advanced manufacturing associate degree. Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
MFG 102	Basic Machining Processes	3	MFG 103	Basic Computer Numerical Control (CNC)	3
ENGR 100	Introduction to Engineering and Technology	3	MFG 106	Basic Mastercam	3
QM 107	Quality Planning and Team Building	3	MFG 110	Geometric Dimensioning and Tolerance, with Inspection	3
	Total Credits	**9**		**Total Credits**	**9**

PROGRAM TOTAL 18 CREDITS

Advanced Manufacturing Certificate

Schoolcraft program code # 1YC.00237

The advanced manufacturing certificate addresses basic competency in skills needed for employment in today's highly technical manufacturing environments. The certificate is designed to train those new to manufacturing, but also serves to update the skills of seasoned manufacturing workers with the most current technology and techniques. These classes all apply to the advanced manufacturing associate degree. Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
MFG 102	Basic Machining Processes	3	MFG 103	Basic Computer Numerical Control (CNC)	3
MFG 105	Manufacturing Processes	4	MFG 106	Basic Mastercam	3
CAD 103	Engineering Graphics	3	MFG 110	Geometric Dimensioning and Tolerance, with Inspection	3
ENGR 100	Introduction to Engineering and Technology	3	QM 107	Quality Planning and Team Building	3
	Total Credits	**13**		**Total Credits**	**12**

First Year—Spring Session

MFG 203	Advanced Computer Numerical Control (CNC)	3
MFG 206	Advanced Mastercam	3
	Total Credits	**6**

PROGRAM TOTAL 31 CREDITS

Advanced Manufacturing AAS Degree

Schoolcraft program code # AAS.00135

The advanced manufacturing program is designed to provide learners with growth and development in a variety of manufacturing processes, to expose them to materials and methods of production and make them aware of quality systems and tools. While this program offers an entry level certification for individuals pursuing a career in manufacturing, it has been designed to enable individuals the opportunity to continually expand and upgrade their applied skills as well as to maintain a thorough mastery of evolving manufacturing technologies. Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

MFG 102	Basic Machining Processes	3	MFG 103	Basic Computer Numerical Control (CNC)	3
MFG 105	Manufacturing Processes	4	MFG 106	Basic Mastercam	3
ENGR 100	Introduction to Engineering and Technology	3	MFG 110	Geometric Dimensioning and Tolerance, with Inspection	3
CAD 103	Engineering Graphics	3	QM 107	Quality Planning and Team Building	3
ENG100*	Communication Skills	3		**Total Credits**	**12**
	Total Credits	**16**			

First Year—Spring Session

Elective	*Select from list*	3
Science	*General Education Science course*	3-5
	Total Credits	**6-8**

Second Year—Fall Semester

Second Year—Winter Semester

MFG 203	Advanced Computer Numerical Control (CNC)	3	MFG 211	3D Computer Numerical Control(CNC) Machining	3
MFG 206	Advanced Mastercam	3	Elective	*Select from list*	2-3
MET 103	Introduction to Materials Science	3	Mathematics	*General Education Mathematics course*	3-5
ENG 106*	Business English	3	Humanities	*General Education Humanities course*	3-4
Social Science	General Education Social Science Course	3-4		*COMA 103 Fundamentals of Speech (recommended)*	
	Total Credits	**15-16**		**Total Credits**	**11-15**

PROGRAM TOTAL 60-67 CREDITS

** Other courses meeting the college requirements may be substituted.*

Electives

MFG 290	Manufacturing Internship	3
MET 116	Introduction to Physical Metallurgy	3
OSH 111	Occupational Safety and Health for General Industry	2
WELD 110	Introduction to Welding—Fabrication Basics	3
WELD 115	Gas Metal Arc Welding (G M A W /M I G.)	3
WELD 119	Gas Tungsten Inert Arc Welding (G T A W /T I G)	3
PLAST 130	Introduction to Plastic Materials	3
PAST 131	Introduction to Plastic Processing	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

MASSAGE THERAPY

Credentials

Massage Therapy certificate	36.5 cr.
Massage Therapy AAS degree	62.5 cr.

Major Description

As more people seek preventative healthcare solutions, including massage in rehabilitation and treatment, the field of massage therapy continues to grow. At Schoolcraft, we offer both a massage therapy certificate and an associate of applied science degree to provide students with the knowledge and skills to work in group and private practices, spas and an increasing variety of healthcare settings. The curriculum includes:

- State-approved courses in bodywork and therapy skills that are designed to meet the expanding requirements of allied and complementary healthcare systems and prepare students to take the national certification exam.
- Real life experiences by participating in community service activities such as providing massages at marathons and fund-raising walks.

National Median Salaries for Massage Therapy-related positions: *(source USBLS)*

Massage Therapist: $35,970

Massage Therapy Certificate

Schoolcraft program code # 1YC.00255

Massage therapy is the systematic manipulation of the soft tissues of the body for the purpose of increased circulation of blood and lymph, pain reduction, relaxation and restoration of health and well-being of the client. The massage therapy program is designed to prepare an individual in the field of soft tissue manipulation and is taught from a clinical perspective. It offers the opportunity to earn a certificate in massage therapy. The certificate is granted after the successful completion of 36.5 credit hours of designated course work.

Massage therapists may be employed in private practice, spa, or a variety of healthcare settings including hospitals and managed care centers, rehabilitation and sports medicine clinics and group and private practices. This program has been approved by the State of Michigan Department of Licensing and Regulatory Affairs and allows students to apply for licensure to practice massage therapy. Successful completion of the certificate readies the individual to sit for exams approved by the State of Michigan massage licensure.

The massage therapy program is dedicated to advancing the science and art of massage therapy. Students who successfully complete all program courses qualify for a certificate of program completion.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

MAS 112	Massage Techniques 1	5.5	MAS 122	Massage Techniques 2	4
MAS 113	Comprehensive Study of Human Body Systems 1	3	MAS 123	Comprehensive Study of Human Body Systems 2	4
MAS 114	Clinical Foundations	1.5	MAS 124	Student Clinic 1	1
MAS 115	Business and Professionalism 1	2	MAS 125	Business and Professionalism 2	3
	Total Credits	**12**		**Total Credits**	**12**

First Year—Winter Semester

First Year—Spring/Summer Session

MAS 132	Massage Techniques 3	3
MAS 133	Comprehensive Study of Human Body Systems 3	5
MAS 134	Student Clinic 2	1.5
M AS 135	Business and Professionalism 3	3
	Total Credits	**12.5**

PROGRAM TOTAL 36.5 CREDITS

Massage Therapy AAS Degree

Schoolcraft program code # AAS.00266

Massage therapy is the systematic manipulation of the soft tissues of the body for the purpose of increased circulation of blood and lymph, pain reduction, relaxation and restoration of health and well-being of the client. The massage therapy program is designed to prepare an individual in the field of soft tissue manipulation and is taught from a clinical perspective. Massage therapists may be employed in a private practice, a spa, or a variety of healthcare settings including hospitals and managed care centers, rehabilitation and sports medicine clinics and group and private practices.

The massage therapy associate degree is offered to meet the expanding needs of both the allied and integrative healthcare systems. Those students who are interested in additional education and wish to enter either field with a broad background and the ability to work with a diverse group of clients and practitioners will do well to add the general education courses. This associate degree program integrates traditional and non-traditional knowledge bases regarding massage therapy and bodywork. Course work includes anatomy and physiology, a variety of massage and bodywork techniques and practices and general education courses. Massage therapists who attain this degree may also plan to pursue a baccalaureate degree in a health or medical program, or an individualized area of study.

The massage therapy program is dedicated to advancing the science and art of massage therapy. This program has been approved by the State of Michigan Department of Licensing and Regulatory Affairs and allows students to apply for licensure to practice massage therapy.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

MAS 112	Massage Techniques 1	5.5	MAS 122	Massage Techniques 2	4
MAS 113	Comprehensive Study of Human Body Systems 1	3	MAS 123	Comprehensive Study of Human Body Systems 2	4
MAS 114	Clinical Foundations	1.5	MAS 124	Student Clinic 1	1
MAS 115	Business and Professionalism 1	2	MAS 125	Business and Professionalism 2	3
	Total Credits	**12**		**Total Credits**	**12**

First Year—Spring/Summer Session

MAS 132	Massage Techniques 3	3
MAS 133	Comprehensive Study of Human Body Systems 3	5
MAS 134	Student Clinic 2	1.5
MAS 135	Business and Professionalism 3	3
	Total Credits	**12.5**

Second Year—Fall Semester

ENG 100	Communication Skills	3	ENG 116	Technical Writing	3
CIS 120	Software Applications	3	MATH 111	Applications—Utility of Math	4
BIOL 101	General Biology	4	HUM 106	Introduction to Art and Music	1
	Total Credits	**10**	BIOL 236*	Human Anatomy and Physiology	5
				Total Credits	**13**

Second Year—Spring/Summer Session

PSYCH 153	Human Relations	3
	Total Credits	**3**

PROGRAM TOTAL 62.5 CREDITS

** Students who may transfer to a baccalaureate program should elect the BIOL 237–238 sequence. BIOL 101 is a prerequisite to BIOL 236 and the BIOL 237–238 sequence. Please review and follow all course requirements.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor.

Number of credits may vary depending on the course selection.

For more information on certification, please contact:

Michigan Board of Massage Therapy Approved Program, PO Box 30670, Lansing, MI 48909, (517) 335-0918

National Certification Board of Therapeutic Massage & Bodywork Assigned Program, 1333 Burr Ridge Parkway, Suite 200, Burr Ridge, IL 60527, 1-800-296-0664, Info@ncbtmb.org

MECHATRONICS

Credentials

Mechatronics skills certificate	18 cr.
Mechatronics certificate	39 cr.
Mechatronics AAS degree	63-67cr.

Major Description

The Mechatronics program focuses on the integration of mechanical, electrical (electronics), fluid power (hydraulics or pneumatics) and computer technologies to control machine movements. The students' studies begin with courses in mechanics, sensors, basic electronics, pneumatics, control logic and robot programming and control.

The program is not directly aimed at specific products. With the multiplicity of equipment presently in use, and the rapid advance and change in technology, the department stresses the development of a broad background that will enable students to find employment and be able to further their skills in a diversified number of industries.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

National Media Salaries for Mechatronics-related positions *(source: US BLS)*

Electrical and Electronics Installers and Repairers (Postsecondary Training): $53,900

Electro-Mechanical Technician (Associate's Degree): $53,070

Mechanical Engineering Technician (Associate's Degree): $53,530

Mechatronics Skills Certificate

Schoolcraft program code # CRT.00326

The mechatronics skills certificate introduces learners to the basic skills needed for employment in today's complex manufacturing environments. These classes all apply to the mechatronics certificate and associate degree.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ELECT 131	Basic Measurement and Reporting Skills	3	ELECT 137	DC Circuits and Mathematical Modeling	5
MATH 113	Intermediate Algebra for College Students	4	MFG 110	Geometric Dimensioning and Tolerance, with Inspection	3
MFG 102	Basic Machining Processes	3		**Total Credits**	**8**
	Total Credits	**10**			

PROGRAM TOTAL 18 CREDITS

Mechatronics Certificate

Schoolcraft program code # 1YC.00225

The mechatronics certificate is designed to address basic competency in skills needed for employment in today's complex manufacturing environments. These classes all apply to the mechatronics associate degree.

The program is not directly aimed at specific products. With the multiplicity of equipment presently in use, and the rapid advance and change in technology, the department stresses the development of a broad background that will enable students to find employment and be able to further their skills in a diversified number of industries.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ELECT 131	Basic Measurement & Reporting Skills	3	*ELECT 137*	*DC Circuits and Mathematical Modeling*	5
ELECT 145	Fluid Power	4	ELECT 251	Programmable Logic & Industrial Controls	4
MATH 113	Intermediate Algebra for College Students	4	MFG 110	Geometric Dimensioning and Tolerance, with Inspection	3
MFG 102	Basic Machining Processes	3	OSH	*Select one*	2
	Total Credits	**14**	OSH 111	Occupational Safety and Health for General Industry	
			OSH 112	Occupational Safety and Health for Construction	
				Total Credits	**14**

First Year— Spring Session

ELECT 138	AC Circuits and Mathematical Modeling	5
ELECT 139	Diodes and Transistors	3
ELECT 218	AC/DC Motors	3
	Total Credits	**11**

PROGRAM TOTAL 39 CREDITS

Mechatronics AAS Degree

Schoolcraft program code # AAS.00226

The mechatronics program focuses on the integration of mechanical, electrical (electronics), fluid power (hydraulics or pneumatics) and computer technologies to control machine movements. The students' studies begin with courses in mechanics, sensors, basic electronics, pneumatics, control logic and robot programming and control.

The program is not directly aimed at specific products. With the multiplicity of equipment presently in use, and the rapid advance and change in technology, the department stresses the development of a broad background that will enable students to find employment and be able to further their skills in a diversified number of industries.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

ELECT 131	Basic Measurement & Reporting Skills	3	ELECT 137	DC Circuits and Mathematical Modeling	5
English	Select one	3	ELECT 145	Fluid Power	4
ENG 100	Communication Skills		ELECT 251	Programmable Logic & Industrial Controls	4
ENG 101	English Composition 1		MFG 110	Geometric Dimensioning and Tolerance, with Inspection	3
MATH 113	Intermediate Algebra for College Students	4		**Total Credits**	**16**
MFG 102	Basic Machining Processes	3			
OSH	*Select one*	2			
OSH 111	Occupational Safety and Health for General Industry				
OSH 112	Occupational Safety and Health for Construction				
	Total Credits	**15**			

First Year—Spring Session

ELECT 138	AC Circuits and Mathematical Modeling	5
English	Select one	3
ENG 102	English Composition 2	
ENG 116	Technical Writing	
	Total Credits	**8**

Second Year—Fall Semester

Second Year—Winter Semester

ELECT 139	Diodes and Transistors	3	ELECT 144	Introduction to Microcontrollers	3
ELECT 218	AC/DC Motors	3	Elective	Select from list	3
ENGR 100	Introduction to Engineering and Technology	3	Humanities	General Education Humanities course	1-4
Social Science	General Education Social Science course	3-4	COMA 103	Fundamentals of Speech (recommended)	
	Total Credits	**12-13**	PHYS 123	Applied Physics	5
				Total Credits	**12-15**

PROGRAM TOTAL 63-67 CREDITS

Electives

CAD 103	Engineering Graphics	3
CIS 129	Introduction to Programming Logic	3
MET 103	Introduction to Materials Science	3
MFG 103	Basic Computer Numerical Control (CNC)	3
QM 107	Quality Planning and Team Building	3
WELD 113	Shielded Metal Arc Welding (S M A W)	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

MEDICAL ASSISTING

Credentials

Medical Biller/Receptionist skills certificate	16 cr.
Physician Office Medical Transcription skills certificate	17 cr.
Phlebotomy skills certificate	17 cr.
Medical Assisting certificate	35 cr.

Major Description

Schoolcraft's nationally accredited medical assisting program will prepare you for both the care-giving and administrative aspects of the growing healthcare field. The program offers four certificate options:

- The medical assisting certificate objective is to prepare competent, entry level medical assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.
- The medical biller/receptionist skills certificate can lead to a career in a variety of healthcare facilities, providing organizational and operational support.
- The phlebotomy skills certificate program will teach students how to draw blood through the venipuncture method, preparing them for employment as a phlebotomist in a doctor's office, clinic or healthcare facility.
- With a physician office medical transcription skills certificate, students will prepare to handle the various job duties of a transcriptionist, including preparing medical letters, chart notes, consultations, history, physicals, discharge notes and initial office evaluations.

National Media Salaries for Medical Assisting-related positions *(source: US BLS)*

Medical Assistant: $29,370 Medical Biller/Receptionist: $31,350 Phlebotomist: $29,730

Medical Biller/Receptionist Skills Certificate

The medical biller/receptionist certificate prepares the student to answer telephones, route calls, greet visitors, respond to inquiries from the public, perform medical insurance billing and provide information about the healthcare facility. Job opportunities are in medical offices, hospitals, clinics, health-related facilities, urgent care centers, and surgical centers.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
CIS 120	Software Applications	3	MA 155*	Medical Insurance Billing	3
HIT 104*	Medical Terminology	4	MA 140*	Medical Office Procedures	3
MA 134*	Medical Insurance Coding	3		**Total Credits**	**6**
	Total Credits	**10**			

PROGRAM TOTAL 16 CREDITS

**Courses apply to the medical assisting program.*

Medical Assisting - Phlebotomy Skills Certificate

The phlebotomy certificate prepares the student for employment as a phlebotomist with job opportunities in a medical office, clinic or healthcare facility. The phlebotomist is trained to draw blood through a method called venipuncture. A venipuncture is performed when a large specimen of blood is needed for testing.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
BIOL 105*	Basic Human Anatomy and Physiology	4	MA 140*	Medical Office Procedures	3
HIT 104*	Medical Terminology	4	CIS 105	Computer Orientation	1
MA 115	Phlebotomy	3	MA 160**	Phlebotomy Internship	2
	Total Credits	**11**		**Total Credits**	**6**

PROGRAM TOTAL 17 CREDITS

**Courses apply to the medical assisting program.*

***MA 160 is not required to obtain the Phlebotomy Skills Certificate. If your major is Phlebotomy, you are strongly encouraged to complete the course in order to obtain eligibility to take the National Center for Competency Testing certification Exam.*

All courses may be applied toward the associate in general studies degree.

Physician Office Medical Transcription Skills Certificate

The physician office medical transcription certificate prepares the student for employment as a transcriptionist with job opportunities in a medical office, clinic, or physician office. The physician office transcriptionist is responsible for typing medical letters, chart notes, consultations, history, physicals, discharge notes, and initial office evaluations.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
BIOL 105*	Basic Human Anatomy and Physiology	4	HIT 114*	Pharmacology for Health Professionals	2
HIT 104*	Medical Terminology	4	MA 140*	Medical Office Procedures	3
OIS 100	Keyboarding 1	2	MT 108	Physician Office Transcription	2
	Total Credits	**10**		**Total Credits**	**7**

PROGRAM TOTAL 17 CREDITS

**Courses apply to the medical assisting program. All courses may be applied toward the associate in general studies degree.*

Medical Assisting Certificate

The medical assisting certificate objective is to prepare competent, entry level medical assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains. The program is designed to coordinate classroom and laboratory experience with practical experience in a healthcare facility such as the physician's office. Medical assistants are multi-skilled allied health professionals who perform a wide range of roles in physicians' offices, clinics and other healthcare settings. They are proficient in a multitude of clinical and administrative tasks and are widely viewed by doctors as vital members of the healthcare delivery team. Students are required to achieve a grade of 2.0 or better for all HIT and MA courses. Academic and medical assisting courses must be completed by the end of the winter semester to be eligible for placement in the Office Practicum offered in the spring. The Office Practicum is an externship that is structured to provide experiences in applying knowledge, in performing administrative and clinical procedures and in developing professional attitudes for interacting with other professionals and consumers in a healthcare facility.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

"The Medical Assisting Program of Schoolcraft College is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org) upon the recommendation of Medical Assisting Education Review Board (MAERB)." Graduates are eligible to take the Certified Medical Assistant (CMA) examination conducted by the certifying board of the American Association of Medical Assistants.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

Admission Prerequisites

BIOL 105	Basic Human Anatomy and Physiology	4
HIT 104	Medical Terminology	4
	Total Credits	**8**

First Year—Fall Semester			**First Year—Winter Semester**		
MA 134	Medical Insurance Coding	3	MA 175*	Medical Laboratory Techniques	3
MA 140	Medical Office Procedures	3	MA 180*	Medical Office Clinical Procedures	4
MA 115	Phlebotomy	3	MA 155	Medical Insurance Billing	3
CIS 120	Software Applications	3	HIT 114	Pharmacology for Health Professionals	2
	Total Credits	**12**		**Total Credits**	**12**

First Year—Spring Session

MA 195	Office Practicum	3
	Total Credits	**3**

PROGRAM TOTAL 35 CREDITS

*Courses open only to students who are officially admitted to the medical assisting program.

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Note: Students must begin MA 195 within six months of completing MA 175 & MA 180.

For more information about accreditation please contact:

Commission on Accreditation of Allied Health Education Programs (CAAHEP)
25400 U.S. Highway 19 North, Suite 158
Clearwater, FL 33763

727-210-2350
mail@caahep.org
www.caahep.org

METALLURGY AND MATERIALS SCIENCE

Credentials

Metallurgy: Applied Physical certificate	29 cr.
Metallurgy and Materials AAS degree	61-66 cr.
Materials Science post-associate certificate	16 cr.

Major Description

The relationships among composition, processing, structure, properties, and performance of industrial materials are the focus of the Schoolcraft College Metallurgy and Materials Science department. Since 1966, the department has been providing students with knowledge of metals and other materials used in processes and industries including automotive, aerospace, appliance, building construction, energy production and distribution, and consumer products. Measurement, a critical precursor to control, is emphasized in the academic curriculum that features significant hands-on laboratory activity. Lectures expound on the qualitative aspects of underlying physical principles. The department offers students the opportunity to learn on an impressive assemblage of material testing and characterization equipment, including a state-of-the-art scanning electron microscope used for high-magnification inspection and compositional analysis.

Program options include:

• Metallurgy and Materials Science Associate of Applied Science (AAS) degree: This is the only two-year program of its kind in the state of Michigan. It gives students broad knowledge of materials testing, manufacturing, and research and development needed to contribute to high performance in positions ranging from laboratory technician to plant manager.

• Applied Physical Metallurgy Certificate: This program allows those who are currently employed in the field with an opportunity to develop or reinforce skills needed to advance in the laboratory or supporting organizations.

• Materials Science Post-Associate Certificate: This program allows professionals who are currently employed in the field with an opportunity to expand their knowledge of current technologies applied to laboratory practice and other materials-related careers.

National Median Salaries for Metallurgy and Materials Science-related positions: MET Technician: $48,000 *(Source: Career Cruising)*

Metallurgy: Applied Physical Certificate

Schoolcraft program code # 1YC.00124

The Applied Physical Metallurgy Certificate program provides current metallurgical practitioners with an opportunity to reinforce technical skills and acquire the academic foundation needed for professional advancement. The program is geared toward part-time students and applies the materials science construct "Composition plus processing leads to structure, properties, and performance as defined by the customer."

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
MET 103	Introduction to Materials Science	3	MET 116	Introduction to Physical Metallurgy	3
CHEM 104	Fundamentals of Chemistry	4	MFG 102	Basic Machining Processes	3
MATH 102	Technical Mathematics	4	CIS 120	Software Applications	3
ENG 116	Technical Writing	3	MET 153	Metallography	3
	Total Credits	**14**	CAD 103	Engineering Graphics	3
				Total Credits	**15**

PROGRAM TOTAL 29 CREDITS

Metallurgy and Materials Science AAS Degree

Schoolcraft program code # AAS.00184

The desired outcome of the Metallurgy and Materials Science AAS Degree program is to prepare students to knowledgeably, safely, and responsibly contribute to metallurgical and material laboratory functions in engineering, manufacturing, and research and development organizations in a variety of industries. In addition, the knowledge gained could be applied in sales, purchasing, marketing, management, quality or other materials-related activities. The emphasis is on the basic theory and tools of metallurgical analysis and characterization techniques. Electives may be selected to nurture burgeoning interests in a specific area of materials science, business, basic sciences, manufacturing, or welding in preparation for further academic work or imminent employment. Metallurgy and Materials Science graduates can apply fundamental knowledge to the processing, testing, and characterization of industrial materials by a variety of techniques.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Students seeking transfer to a baccalaureate program should request transfer guides provided by the department.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
MET 103	Introduction to Materials Science	3	ENG 116	Technical Writing	3
CHEM 104	Fundamentals of Chemistry	4	CAD 103	Engineering Graphics	3
MATH 102	Technical Mathematics	4	MET 116	Introduction to Physical Metallurgy	3
English	*Select one*	3	CIS 120	Software Applications	3
ENG 100	Communication Skills		MET 153	Metallography	3
ENG 101	English Composition 1			**Total Credits**	**15**
	Total Credits	**14**			

First Year—Spring Session

MFG 102	Basic Machining Processes	3
WELD 110	Introduction to Welding Basics for Fabrication	3
	Total Credits	**6**

Second Year—Fall Semester			**Second Year—Winter Semester**		
MET 212*	Heat Treatment	3	MET 248*	Electron Microscopy and Image Analysis	3
MET 216*	Mechanical Testing	3	MET 281*	Special Problems in Materials Science	3
BIOL 140	Scanning Electron Microscopy	4	Social Science	*Select General Education Social Science course(s)* *PSYCH 153 Human Relations (recommended)*	3-4
ENGR 100	Introduction to Engineering and Technology	3	Humanities	*Select General Education Humanities course(s)* *COMA 103 Fundamentals of Speech (recommended)*	1-4
Elective	*Select from list below*	3-4		**Total Credits**	**10-14**
	Total Credits	**16-17**			

PROGRAM TOTAL 61-66 CREDITS

**These classes are offered on a rotational basis. Contact Metallurgy faculty for current and projected offerings.*

Electives

BUS 103	Organizing a Small Business	3
MET 160*	Composite Materials	3
MET 272*	Corrosion Testing	3
MET 290	Metallurgy Internship	3
MFG 105	Manufacturing Processes	4
PLAST 130	Introduction to Plastic Materials	3
PLAST 131	Introduction to Plastic Processing	3
WELD 262	Welding Metallurgy	3

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor.
Number of credits may vary depending on the course selection.

Materials Science Post-Associate Certificate

Schoolcraft program code # PAC.00179

The Materials Science Post-Associate Certificate is designed for working technical professionals who need specific training in metallurgical technologies or laboratory practices.

This program is geared toward part-time students and will enhance the student's ability to contribute in metallurgical technology and laboratory settings. In addition, the program will benefit certain personnel in management, supervision, sales, quality, purchasing, or other materials-related technical support functions.

Prior to admission, students must have earned a minimum of an accredited associate degree in applied science. Prerequisite and co-requisite requirements must be honored or evidence of prior learning proficiency must be demonstrated. Please contact the appropriate administrator to discuss options.

All courses are not offered each semester. Students should work with an academic advisor or counselor to set up a schedule that will work for them.

The post-associate certificate is awarded upon successful completion of 16 credit hours (exact number may vary slightly due to credit value or content of courses).

Program Courses

Completion of a minimum of 16 credit hours is required. A student is required to take the three courses listed below:

MET 212*	Heat Treatment	3
MET 216*	Mechanical Testing	3
MET 281*	Corrosion Testing	3

A student may choose from any of the courses listed below:

BUS 103	Organizing a Small Business	3
MET 153	Metallography	3
MET 160*	Composite Materials	3
MET 272*	Corrosion Testing	3
MET 290	Metallurgy Internship	3
MFG 105	Manufacturing Processes	4
PLAST 130	Introduction to Plastic Materials	3
PLAST 131	Introduction to Plastic Processing	3
WELD 262	Welding Metallurgy	3
QM 107	Quality Planning and Team Building	3

Courses can be taken through independent study.

*These classes are offered on a rotational basis. Contact Metallurgy faculty for current and projected offerings.

MUSIC

Credentials

Music Foundations certificate	29 cr.
Music Intermediate certificate	30 cr.
Keys for Piano Teacher skills certificate	16 cr.
Piano Teacher certificate	28 cr.
Piano Teacher Advanced certificate	30 cr.

Major Description

Schoolcraft's Music program offers students five certificate options to provide them with opportunities to expand their music horizons, earn music credits that will transfer to a four-year institution to pursue a major in music or make music their profession. Students can also work towards an Associate in Fine Arts degree with an emphasis in music. If you dream of sharing your love for the piano with others, then Schoolcraft's unique piano teacher certificate programs are perfect for you. The programs offer a thorough grounding in teaching materials and techniques along with music theory and history. You will also have the opportunity to practice your teaching skills right on campus in our group piano classes for children.
All applicants must audition in order to enter the piano teacher certificate program.

- Prepare for a career of teaching piano in music academies, community education programs, or out of your own home.
- Challenge your own abilities and prepare to share your love of music with the next generation.
- Establish a foundation for state and national Music Teachers Association certification.
- Music students can also gain performance experience through participation in one of Schoolcraft's music groups, including the Wind Ensemble, Choral Union, Jazz Program and Synthesizer Ensembles.

Music students can also gain performance experience through participation in one of Schoolcraft's music groups, including the Wind Ensemble, Choral Union, Jazz Program and Synthesizer Ensembles.

National Median Salaries for Music-related Positions

Piano Teacher: $36,680 (with Bachelor's Degree) *(source: US BLS)*

Music: Foundations Certificate

Schoolcraft program code # 1YC.00162

The music foundations certificate is designed for students who want to build their musical abilities for personal growth and enjoyment. Students interested in transferring to a four-year institution as a music major or pursuing a career as a professional musician are advised to complete the music intermediate certificate* with the guidance of the Music Department faculty.
Successful students completing this certificate will be able to notate all intervals, simple rhythmic patterns and basic chord progressions. Students will have a good general knowledge of musical styles from the 1600s to the present day; will have gained experience in performing publicly in ensembles; and will also have developed elementary training as soloists in voice or as instrumentalists.
All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
MUSIC 104	Basic Materials in Music Theory	3	Music	*Select one*	2
Music	*Select one*	2	MUSIC 122**	Class Piano 2	
MUSIC 121	Class Piano 1		MUSIC 132	Applied Music—Piano 2	
MUSIC 131	Applied Music—Piano 1		Music	*Select one*	2
MUSIC 105	Music Appreciation	3	MUSIC 134	Applied Music—Voice 2	
Music	*Select one*	2	MUSIC 136	Applied Music—Instrumental	
MUSIC 133	Applied Music—Voice 1		HUM 106	Introduction to Art and Music	1
MUSIC 135	Applied Music—Instrumental 1		Electives	*English Literature, Poetry or Art Appreciation Suggested*	6
MUSIC 164	Music History 1—17th and 18th Centuries	3	MUSIC 171	Music Technology 1	3
Elective*	*Select a Music course not already taken from the list (minimum 1 credit)*		Elective*	*Select a Music course not already taken from the list (minimum 1 credit)*	
	Total Credits	**14**		**Total Credits**	**15**

Program Total 29 Credits

* *Number of credits may vary depending on the course selection.* ** *Requires audition.*

Electives

MUSIC 117**	Choir 1	2	MUSIC 136	Applied Music—Instrumental 2	2
MUSIC 118**	Choir 2	2	MUSIC 141	Wind Ensemble 1	2
MUSIC 124	Chamber Singers 1	1	MUSIC 142	Jazz Band 1	2
MUSIC 127	Chamber Singers 2	1	MUSIC 143	Practice Teaching and Practicum in Piano Teaching 1	2
MUSIC 133	Applied Music—Voice 1	2	MUSIC 168	Synthesizer Ensemble 1	3
MUSIC 134	Applied Music—Voice 2	2	MUSIC 169	Synthesizer Ensemble 2	3
MUSIC 135	Applied Music—Instrumental 1	2			

Music: Intermediate Certificate

Schoolcraft program code # 1YC.00163

The music intermediate certificate is designed for students who wish to transfer to a four-year institution as a music major and/or pursue music as a profession. Students in this program must consult with a Music Department faculty member before beginning this program. Faculty will provide information about expectations for appropriate course work and practice schedules for students intending to major in music. Completion of this certificate does not automatically qualify students for admission to a four-year music major program. The quality of the student's musicianship and auditions are key factors in admission decisions.

Successful students completing this certificate will be able to notate moderately difficult rhythmic patterns and moderately difficult chord progressions. Students will have developed a more specific knowledge of music from the 1600s to the present day. Students will have gained experience in performing publicly in ensembles, and will have developed technical and musical skills as well as experience in performing as soloists in voice or as instrumentalists in public recitals and concerts.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

Students are advised to consult with Music Department faculty before beginning classes in this certificate.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

MUSIC 137	Sight Singing and Ear Training 1	2	Music	*Select one*	2
MUSIC 153	Music Theory 1	3	MUSIC 132***	Applied Music—Piano 2	
Music	*Select one*	2	MUSIC 232***	Applied Music—Piano 4	
MUSIC 131***	Applied Music—Piano 1		Music	*Select one*	2
MUSIC 231***	Applied Music—Piano 3		MUSIC 234***	Applied Music—Voice 4	
Music	*Select one*	2	MUSIC 236***	Applied Music—Instrumental 4	
MUSIC 233***	Applied Music—Voice 3		MUSIC 138	Sight Singing and Ear Training 2	2
MUSIC 235***	Applied Music—Instrumental 3		MUSIC 165	Music History 2— 19th and 20th Centuries	3
Elective*	*Select 1 or 2 Music courses not already taken from the list (minimum 3 credits)*	3	MUSIC 154	Music Theory 2	3
	Total Credits	**12**	Elective*	*Select 1 or 2 Music courses not already taken from the list (minimum 3 credits)*	3
				Total Credits	**15**

First Year—Winter Semester

First Year—Spring/Summer Session

Elective	English Literature, Poetry, or Art Appreciation Suggested	3
	Total Credits	**3**

PROGRAM TOTAL 30 CREDITS

Number of credits may vary depending on the course selection.* * Requires audition.*

****Course selection dependent on courses taken in the foundations certificate.*

Electives

MUSIC 117**	Choir 1	2	MUSIC 135	Applied Music—Instrumental 1	2
MUSIC 118**	Choir 2	2	MUSIC 136	Applied Music—Instrumental 2	2
MUSIC 217**	Choir 3	2	MUSIC 235	Applied Music—Instrumental 3	2
MUSIC 218**	Choir 4	2	MUSIC 236	Applied Music—Instrumental 4	2
MUSIC 124	Chamber Singers 1	1	MUSIC 141	Wind Ensemble 1	2
MUSIC 127	Chamber Singers 2	1	MUSIC 241	Wind Ensemble 2	2
MUSIC 224	Chamber Singers 3	1	MUSIC 142	Jazz Band 1	2
MUSIC 227	Chamber Singers 4	1	MUSIC 242	Jazz Band 2	2
MUSIC 133	Applied Music—Voice 1	2	MUSIC 168	Synthesizer Ensemble 1	3
MUSIC 134	Applied Music—Voice 2	2	MUSIC 169	Synthesizer Ensemble 2	3
MUISC 233	Applied Music—Voice 3	2	MUSIC 268	Synthesizer Ensemble 3	3
MUSIC 234	Applied Music—Voice 4	2	MUSIC 269	Synthesizer Ensemble 4	3

Music: Keys for Piano Teachers Skills Certificate

Schoolcraft program code # CRT.00345

keys for Piano Teachers is designed for current piano teachers or those interested in entering the profession. The program introduces pianists to teaching materials and techniques and provides opportunities to improve their keyboard techniques for piano instruction. In addition, students are given opportunities to observe children enrolled in group classes on campus. The program provides the opportunity to enroll in a variety of electives such as Music History, Music Technology and non-music courses. In order to enter Keys for Piano Teachers, each applicant must audition to demonstrate an appropriate level of musicianship. MUSIC 121 Class Piano 1 and MUSIC 104 Basic Materials in Music Theory may help to develop the skills necessary to successfully pass the audition. Contact the Music department for further information.

All courses are not offered each semester. Students should work with the head of the Piano Program to set up a schedule that will work for them. Students who satisfactorily complete the program requirements, and upon recommendation of the music faculty, qualify for a certificate of program completion. Applied Music has an added fee.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

MUSIC 201	Keyboard Skills for Piano Teachers 1	2
MUSIC 247	Piano Teaching Techniques and Materials 1	3
MUSIC 143	Practice Teaching and Practicum in Piano Teaching 1	2
Electives	*Select Music courses not already taken from the list (minimum 9 credits)*	9
	Total Credits	**16**

PROGRAM TOTAL 16 CREDITS

Electives

MUSIC 105	Music Appreciation	3	MUSIC 155	History of Broadway	3
MUSIC 131	Applied Music—Piano 1	2	MUSIC 164	Music History 1 —17th and 18th Centuries	3
MUSIC 133	Applied Music—Voice 1	2	MUSIC 165	Music History 2 —19th and 20th Centuries	3
MUSIC 135	Applied Music—Instrumental 1	2	MUSIC 168	Synthesizer Ensemble	3
MUSIC 137	Sight Singing and Ear Training 1	2	MUSIC 171	Music Technology 1	3
MUSIC 140	Jazz Lab Band—Improvisation 1	2	HUM 106	Introduction to Art and Music	3
MUSIC 149	Popular Music Culture in America	3		Other non-MUSIC courses as approved	1
MUSIC 153	Music Theory 1	3			

Music: Piano Teacher Certificate

Schoolcraft program code # 1YC.00115

The Piano Teachers Certificate program is designed for pianists to pursue professional careers as private piano teachers. The curriculum is structuredto provide instruction in piano teaching materials and techniques as well as music theory and history. In addition, students are given numerous opportunities to observe and teach children enrolled in group piano classes on campus. (Two supervised teaching sessions of children are required.)

The program is aligned with beginning and intermediate requirements provided in Michigan's Student Achievement Testing and the Royal Conservatory programs. In order to enter Keys for Piano Teachers, each applicant must audition to demonstrate an appropriate level of musicianship. MUSIC 121 Class Piano 1 and MUSIC 104 Basic Materials in Music Theory may help to develop the skills necessary to successfully pass the audition. Contact the Music department for further information. Applicants having successfully completed the Keys for Piano Teachers Skills Certificate are automatically eligible and coursework will transfer.

All courses are not offered each semester. Students should work with the head of the Piano Program to set up a schedule that will work for them. Students who satisfactorily complete the program requirements, and upon recommendation of the music faculty, qualify for a certificate of program completion. Applied Music has an added fee.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
MUSIC 131	Applied Music—Piano 1	2	MUSIC 132	Applied Music—Piano 2	2
MUSIC 137	Sight Singing and Ear Training 1	2	MUSIC 138	Sight Singing and Ear Training 2	2
MUSIC 143	Practice Teaching and Practicum in Piano Teaching 1	2	MUSIC 144	Practice Teaching and Practicum in Piano Teaching 2	2
MUSIC 153	Music Theory 1	3	MUSIC 154	Music Theory 2	3
MUSIC 201	Keyboard Skills for Piano Teachers 1	2	MUSIC 202	Keyboard Skills for Piano Teachers 2	2
MUSIC 247	Piano Teaching Techniques and Materials 1	3	MUSIC 257*	Piano Teaching Techniques and Materials 2	3
	Total Credits	**14**		**Total Credits**	**14**

PROGRAM TOTAL 28 CREDITS

**These classes are offered on a rotational basis. Contact Liberal Arts office for current offerings.*

Music: Piano Teacher Advanced Certificate

Schoolcraft program code # 1YC.00246

The Piano Teachers Advanced Certificate program is designed for pianists to advance their professional careers as private piano teachers. The curriculum is structured to provide advanced instruction in piano teaching materials and techniques as well as music theory and history. In addition, students are given numerous opportunities to observe and teach children enrolled in group piano classes on campus. (Two supervised teaching sessions of children are required.)

The program is aligned with intermediate and advanced requirements provided in Michigan's Student Achievement Testing and the Royal Conservatory programs.

Successful completion of the Piano Teachers Certificate is required for admission to the Advanced Certificate program.
All courses are not offered each semester. Students should work with the head of the Piano Program to set up a schedule that will work for them. Students who satisfactorily complete the program requirements, and upon recommendation of the music faculty, qualify for a certificate of program completion. Applied Music has an added fee.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
MUSIC 231	Applied Music—Piano 3	2	MUSIC 232	Applied Music—Piano 4	2
MUSIC 164	Music History 1 —17th and 18th Centuries	3	MUSIC 165	Music History 2 —19th and 20th Centuries	3
MUSIC 243	Practice Teaching and Practicum in Piano Teaching 3	2	MUSIC 244	Practice Teaching and Practicum in Piano Teaching 4	2
MUSIC 250	Music Theory 3	3	MUSIC 252	Music Theory 4	4
MUSIC 204	Keyboard Skills for Piano Teachers 3	2	MUSIC 205	Keyboard Skills for Piano Teachers 4	2
MUSIC 277	Piano Teaching Techniques and Materials 3	3	MUSIC 298	Special Music Projects for Honors Studies	2
	Total Credits	**15**		**Total Credits**	**15**

PROGRAM TOTAL 30 CREDITS

NURSING CAREER LADDER CURRICULUM

Credentials

Nursing Assistant Training Program skills certificate	16 cr.
Nursing—Licensed Practical certificate	44.5 cr.
Nursing—Registered AAS degree (ADN)	63.5 cr.

Major Description

Schoolcraft offers students four options when preparing for a career in this vital healthcare field:

- Nursing assistant training prepares students for entry-level health care positions, primarily in extended care facilities. This seven-week course may be taken alone or with other courses to attain a nursing assistant training program skills certificate. Both options prepare students to take the competency evaluated nursing assistant (CENA) exam for placement on the Michigan nursing assistant registry. The nursing assistant program is approved by the Michigan Department of Licensing and Regulatory Affairs (LARA). The nursing assistant preparation courses are offered each semester.
- The nursing-licensed practical (PN) certificate option may be completed in approximately one year and prepares students to take the National Council Licensure Examination-Practical Nursing (NCLEX-PN). This option is available to students at the end of the first year of the registered nursing associate degree sequence.
- The nursing-registered associate degree in applied science qualifies students to take the National Council Licensure Examination-Registered Nursing (NCLEX-RN) and provides the academic background needed to enter a bachelor of science in nursing degree program.
- Another option allows licensed practical nurses (LPNs) advanced placement into the associate degree nursing program with eligibility to take the National Council Licensure Examination-Registered Nursing (NCLEX-RN).

The practical and registered nursing programs are approved by the Michigan Board of Nursing and the Accreditation Commission for Education in Nursing (ACEN) and provide nursing theory and clinical practice in caring for adults, children, and families to prepare students for entry-level positions in a variety of healthcare settings.

Practical and associate nursing courses must be taken in sequence and a minimum grade of 80% in each nursing course is required for progres¬sion to the next course. Academic courses other than nursing must be completed according to program requirements. Students are admitted once a year in the fall semester.

National Median Salaries for Nursing-related positions *(source: US BLS);*

RN: $69,790 LPN: $43,420 NA: $26,250

Nursing Career Ladder Curriculum

The nursing career ladder curriculum (NCLC) offers options for practical nursing (PN) and registered nursing (RN) associate degree (ADN) education. Students are admitted into the ADN program and are eligible to apply for licensure as a licensed practical nurse (LPN) following successful completion of the PN program requirements at the end of the first academic year. Students who continue and successfully complete the ADN program, are eligible to apply for licensure as a registered nurse (RN). Michigan licensed practical nurses (LPNs) may apply for advanced placement into the ADN program.

The associate degree and practical nursing program are approved by the Michigan Board of Nursing. For more information on MI-Board of Nursing approval and licensure please contact:

LARA Department of Licensing and Regulatory Affairs
Bureau of Health Care Services, Board of Nursing
611 West Ottawa Street, P.O. Box 30670
Lansing, MI 48909-8170
517-335-0318
bhcsinfo@michigan.gov
www.michigan.gov/LARA

The nursing associate degree and practical programs are accredited by the Accreditation Commission for Education in Nursing (ACEN). For further information, please contact:

Accreditation Commission for Education in Nursing (ACEN)
3343 Peachtree Road NE, Suite 850
Atlanta, GA 30326
404-975-5000
www.acen.org
info@acenursing.org

Nursing: Registered AAS Degree (ADN)

Schoolcraft program code # AAS.00000

Nursing courses are open only to students who are officially admitted to the nursing career ladder curriculum.

The associate degree nursing program is approved by the Michigan Board of Nursing and the Accreditation Commission for Education in Nursing (ACEN). This program provides advanced nursing theory and clinical practice in caring for adults, children and families to prepare graduates for entry-level positions in hospitals, long-term care facilities, medical offices, home health and other community settings.

Students who satisfactorily complete the associate degree nursing program are eligible to apply to take the National Council Licensure Examination-Registered Nurse (NCLEX-RN) as a step in obtaining licensure as a registered nurse (RN).

The nursing program has pre-admission and admission requirements that are reviewed annually. It is essential to contact the Admissions and Welcome Center for a copy of the current program requirements. Students who do not complete the final admission requirements by scheduled deadlines will be deferred to another admission year. Students may only defer one time without having to repeat the application process. Courses must be taken in sequence. A minimum grade of 80% in each nursing course is required for progression to the next course. Academic courses other than nursing must be finished according to program requirements. Computer lab use and testing is required in this program. See Computer Use policy 3110 at schoolcraft.edu for more information. Students must furnish and maintain uniforms and supplies as required by the department and clinical facilities.

This program is offered at the Livonia Campus. Students are admitted once a year, at the beginning of the fall semester. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

*Admission Prerequisites and Supportive Courses**

BIOL 236**	Human Anatomy and Physiology	5
PSYCH 201	Introductory Psychology	4
MATH 113***	Intermediate Algebra for College Students	4
	Total Credits	**13**

First Year—Fall Semester

NURS 104	Pharmacology for Nurses	3
NURS 105	Nursing Foundations of Practice 1	4
NURS 106	Nursing Foundations of Practice 2	4.5
HUM 106	Introduction to Art and Music	1
	Total Credits	**12.5**

First Year—Winter Semester

NURS 107	Medical Surgical Nursing	4.5
NURS 108	Surgical Medical Nursing	4.5
ENG 101	English Composition 1	3
	Total Credits	**12**

First Year—Spring Session

NURS 128	Maternal-Child Nursing 1	5
	Total Credits	**5****

Second Year—Fall Semester

NURS 205	Advanced Medical-Surgical Nursing	4.5
NURS 246	Psychiatric Mental Health Nursing	4
ENG 102	English Composition 2	3
	Total Credits	**11.5****

Second Year—Winter Semester

NURS 248	Maternal-Child Nursing 2	5
NURS 250	Advanced Concepts in Registered Nursing	4.5
	Total Credits	**9.5****

PROGRAM TOTAL 63.5 CREDITS

**COLLS 130 Applied Learning Theory for Nursing Majors is a suggested elective for pre-nursing students to develop study skills and success strategies. PSYCH 201 Introduction to Psychology is a supportive course not a prerequisite course and may be taken later as long as it is completed by the end of the first academic year.*

***Students may also take the BIOL 237-238 Anatomy and Physiology course sequence which may be preferred for BSN programs.*

****Or equivalent or higher math course.*

*****Students should work with an advisor/counselor if more credits are needed per semester to qualify for financial aid.*

Nursing: Licensed Practical Certificate (Practical Nursing Program)

Schoolcraft program code # 1YC.00017

Nursing courses are open only to students who are officially admitted to the nursing career ladder curriculum.

The practical nursing program is approved by the Michigan Board of Nursing and accredited by the Accreditation Commission for Education in Nursing (ACEN). This program provides basic nursing theory and clinical practice in caring for adults, children and families to prepare graduates for entry-level positions in long-term care facilities, medical offices, hospitals, home health and other community settings.

Students who satisfactorily complete the practical nursing program are eligible to apply to take the National Council Licensure Examination-Practical Nurse (NCLEX-PN) as a step in obtaining licensure as a licensed practical nurse (LPN). Students who wish to pursue this option must successfully complete the Advanced Concepts in Practical Nursing course at the end of the first academic year along with the other first year courses within the associate degree of nursing program.

The nursing program has pre-admission and admission requirements that are reviewed annually. It is essential to contact the Admissions and Welcome Center for a copy of the current program requirements.

Courses must be taken in sequence. A minimum grade of 80% in each nursing course is required for progression to the next course. Academic courses other than nursing must be finished by the completion of the nursing courses. Computer lab use and testing is required in this program. See Computer Use policy 3110 at schoolcraft.edu for more information. Students must furnish and maintain uniforms and supplies as required by the department and clinical facilities.

This program is offered at the Livonia Campus. Students selecting the practical nursing program option at the end of the first year of the ADN program sequence may then complete the registered nursing (ADN) program without further application or admission requirements. Students are

admitted once a year with the registered nursing (ADN) students, at the beginning of fall semester. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

SAMPLE SCHEDULE OF COURSES

*Admission Prerequisites and Supportive Courses**

BIOL 236**	Human Anatomy and Physiology	5
PSYCH 201	Introductory Psychology	4
MATH 113***	Intermediate Algebra for College Students	4
	Total Credits	**13**

First Year—Fall Semester

NURS 104	Pharmacology for Nurses	3
NURS 105	Nursing Foundations of Practice 1	4
NURS 106	Nursing Foundations of Practice 2	4.5
	Total Credits	**11.5****

First Year—Winter Semester

NURS 107	Medical Surgical Nursing	4.5
NURS 108	Surgical Medical Nursing	4.5
ENG 101	English Composition 1	3
	Total Credits	**12**

First Year—Spring Session

NURS 128	Maternal-Child Nursing 1	5
	Total Credits	**5****

First Year—Summer Session

NURS 139	Advanced Concepts in Practical Nursing	3
	Total Credits	**3****

PROGRAM TOTAL 44.5 CREDITS

**COLLS 130 Applied Learning Theory for Nursing Majors is a suggested elective for pre-nursing students to develop study skills and success strategies. PSYCH 201 Introduction to Psychology is a supportive course not a prerequisite course and may be taken later as long as it is completed by the end of the first academic year.*

***Students may also take the BIOL 237-238 Anatomy and Physiology course sequence which may be preferred for BSN programs.*

****Or equivalent or higher math course.*

*****Students should work with an advisor/counselor if more credits are needed per semester to qualify for financial aid.*

Advanced Placement Option for LPNs

The associate degree nursing (ADN) program offers an advanced placement option for licensed practical nurses (LPNs) who are interested in becoming registered nurses (RNs). LPNs must be licensed in Michigan and candidates are placed in the ADN program sequence based on a thorough review of academic records and nursing experience/employment background. LPNs are admitted on an ongoing basis to start the nursing courses in the fall semester of each academic year. The number of LPNs admitted depends on space availability and this number may vary per year.

This program requires a special admissions process. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu to complete an application.

Nursing: Nursing Assistant Training Program Skills Certificate

The Nursing Assistant Preparation course is open only to students who are officially admitted to college. Contact the Admissions and Welcome Center at 734-462-4426 or admissions@schoolcraft.edu for more information.

Students may take the Nursing Assistant Preparation course (NATP 110) alone or may complete the course along with the other courses listed if a Schoolcraft skills certificate is desired. Both options provide students with eligibility to take the state CENA (competency evaluated nursing assistant) exam. The state of Michigan exam is comprised of written and clinical skills evaluations.

This curriculum is designed to prepare the student for an entry-level nursing assistant position with potential for employment opportunities primarily in extended care facilities with some application to hospitals, clinics, doctors' offices, and patients' homes. Classroom lectures, hands-on practice of skills as well as supervised experience in an extended care facility are provided. This program meets federal and state requirements and is offered at the Livonia campus.

Students should work with an academic advisor or counselor to develop a schedule that will work for them and assist with meeting any financial aid requirements per semester. Students must meet health and clinical requirements, have a negative drug screen on first attempt, and pass a criminal background check. Computerized testing is required during this course. All required courses for the Schoolcraft College skills certificate option must be completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

NATP 110	Nursing Assistant Preparation	10
BIOL 236**	Human Anatomy and Physiology	5
HUM 106	Introduction to Art and Music	1
	Total Credits	**16**

** Students who may transfer to a baccalaureate program should elect the BIOL 237–238 Anatomy & Physiology course sequence. BIOL 236 or the BIOL 237-238 combination must be completed with a 3.0 or better for future nursing program admission.*

All courses may be applied toward the associate in general studies degree.

OFFICE INFORMATION SYSTEMS

Credentials

Office Specialist skills certificate	17-18 cr.
Accounting certificate Office Specialist certificate	30 cr.
Office Administration AAS degree	62 cr.

Major Description

Today, running an office takes more skills than ever before, and Schoolcraft's office information systems programs offer the technical, communication and leadership insight to prepare students as an office professional or administrative assistant. Students can earn an associate degree of applied science or two specialized certificates:

- Office Administration AAS Degree: This program helps students advance their career by enhancing their technical, communication and leadership management skills.
- Office Specialist Skills Certificate: This program combines instruction in commonly used computer software packages along with business communication and time and project management to help further a student's office career.
- Office Specialist Certificate: This program focuses on office application software and computers that are the center of today's business office, and prepares students for careers in a variety of office and administrative positions.

National Media Salaries for Office Information Systems-related positions *(source: US BLS)*

Adm. Support Supervisor: $41,144 (*Glassdoor.com*)
Information Processing Coordinator: $37,240
Legal Secretary: $42,170
Medical Secretary: $31,350
Executive Secretary/Administrative Assistant: $47,500

Office Specialist Skills Certificate

Schoolcraft program code # CRT.00370

This program is designed to help prepare students for today's technologically driven work environment. The program combines instruction in the most commonly used computer software packages as well as the critical areas of business communication and time and project management. Individuals who are already employed may find that the certificate increases their opportunity for promotion.

This certificate can be used as a building block toward the achievement of the office specialist certificate or the associate degree in applied science in office administration. Successful completion of these courses will also provide the foundation for the Microsoft Office Specialist certification examination.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
OIS 100*	Keyboarding 1	2	OIS 165*	Microsoft Word for Windows	3
OIS 195*	Time and Project Management	1	CIS 122*	Microsoft Outlook	2
OIS 105*	Office Communication—Editing Skills	3	Elective	Select from list	2-3
CIS 120*	Software Applications	3		**Total Credits**	**7-8**
	Total Credits	**9**			

PROGRAM TOTAL 16-17 CREDITS

Electives

BUS 204	Personal Finance	3
CIS 180*	Spreadsheet Applications—Current Software	3
HDS 110	Career Decision Making	2
OIS 185*	Business Presentation 1—Fundamental Concepts	3
OIS 255*	Office Procedures	2
OIS 265*	Advanced Microsoft Word for Windows	3

** Courses are part of the office specialist certificate and/or the office administration associate degree.*

All courses may be applied toward the associate of general studies degree.

Office Specialist Certificate

Schoolcraft program code # 1YC.00166

This certificate program focuses on office application software for today's administrative assistant. Computers and software applications are the center of the technological revolution taking place in today's business offices.

Students enrolled in the office specialist program will be prepared to take on broader and more challenging responsibilities in the business world. Successful completion of these courses helps to prepare students for the Microsoft Office Specialist certification exam.

Individuals who successfully complete this program will be prepared to obtain employment as administrative or executive secretaries, software specialists, word processing supervisors and managers.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
OIS 100	Keyboarding 1	2	OIS 165	Microsoft Word for Windows	3
OIS 102	Keyboarding 2	2	CIS 122	Microsoft Outlook	2
OIS 105	Office Communications—Editing Skills	3	OIS 255	Office Procedures	2
CIS 120	Software Applications	3	CIS 180	Spreadsheet Applications—Current Software	3
OIS 195	Time and Project Management	1	CIS 215	Advanced Software Applications	3
	Total Credits	**11**		**Total Credits**	**13**

Second Year— Fall Semester

OIS 185	Business Presentation 1—Fundamental Concepts	3
OIS 265	Advanced Microsoft Word for Windows	3
	Total Credits	**6**

PROGRAM TOTAL 30 CREDITS

Office Administration AAS Degree

Schoolcraft program code # AAS.00133

The office professional, as a member of the office information systems management team, plays an integral role in the successful operation of the organization. In today's information age, the OIS professional functions as the pivotal person in the office communications network.
The office administration curriculum is designed to offer courses that enhance students' technical skills, communication skills and leadership/management skills with an emphasis on the professional work ethic.
All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.
Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			First Year—Winter Semester		
OIS 100	Keyboarding 1	2	CIS 120	Software Applications	3
OIS 102	Keyboarding 2	2	OIS 255	Office Procedures	2
OIS 195*	Time and Project Management	1	OIS 165	Microsoft Word for Windows	3
ENG 101	English Composition 1	3	ENG 106	Business English	3
BUS 101	Introduction to Business	3	MATH 101	Business Mathematics	3
OIS 105	Office Communications—Editing Skills	3			
	Total Credits	**14**		**Total Credits**	**14**

First Year—Spring/Summer Session

COMA 103	Fundamentals of Speech	3
	Total Credits	**3**

First Year—Fall Semester			First Year—Winter Semester		
OIS 260	Office Administration	3	CIS 122	Microsoft Outlook	2
CIS 180	Spreadsheet Applications—Current Software	3	OIS 265	Advanced Microsoft Word for Windows	3
OIS 185	Business Presentation 1—Fundamental Concepts	3	CIS 215	Advanced Software Applications	3
ACCT 201	Principles of Accounting 1	4	Science*	*Select any General Education Science course*	4
CIS 225	Database Management Systems	3	PSYCH 153	Human Relations	3
	Total Credits	**16**		**Total Credits**	**15**

PROGRAM TOTAL 62 CREDITS

** Number of credits may be higher dependent on the General Education Science course selected.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may be higher dependent on the course selection.

PHARMACY

Credentials

Pre-Pharmacy AS degree	76-80 cr.

Major Description

Pharmacists are a vital link in the healthcare system involved in dispensing medications and understanding drug interactions and monitoring patient care and therapies. Schoolcraft's associate of science in pre-pharmacy degree is designed to be transferrable to a university pharmacy program. Pharmacists can find positions in a variety of settings, such as retail pharmacies, hospitals, clinics, long-term care facilities and the armed services. They can also find employment in academic, research and public health organizations.

Students should consult with an academic advisor or counselor to ensure that their Schoolcraft courses will transfer to the desired university pharmacy program.

National Media Salaries for Pharmacy-related positions *(source: US BLS)*

Pharmacist: $116,670

Pre-Pharmacy AS Degree

Schoolcraft program code # AS.00403

The pre-pharmacy transfer program is designed for students interested in a transferable degree that provides appropriate science content and competencies that will help them as they pursue further study in the field of pharmacy. Students will be introduced to the roles, job opportunities, and some of the timely and important issues in the field of pharmacy.

The pre-pharmacy program provides general education courses at the freshman and sophomore level, with an emphasis on the sciences, in preparation for admission to a university doctoral pharmacy program. Admission to university doctoral pharmacy programs is highly competitive and the transferring institution must be consulted for additional pre-admission requirements.

This program outline provides the framework for a pre-pharmacy program, but it does not represent a final academic plan for any specific four-year college or university. Students need to be aware that many health profession educational programs require background screening. Students who satisfactorily complete all college and program requirements qualify for an associate in science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

PHARM 101	Introduction to Pharmacy	3
MATH 150	Calculus with Analytic Geometry 1	5
BIOL 120	Principles of Biology 1	5
CHEM 111	General Chemistry 1	4
	Total Credits	**17**

First Year—Winter Semester

ENG 101	English Composition 1	3
BIOL 130	Principles of Biology 2	5
CHEM 117	General Chemistry 2 and Qualitative Analysis	5
Social Science*	*Select one General Education Social Science course*	3-4
	Total Credits	**16-17**

First Year—Spring Session

Humanities*	*Select one General Education Humanities course*	3-4
Social Science*	*Select one General Education Social Science course*	3-4
	Total Credits	**6-8**

Second Year—Fall Semester

CHEM 213	Organic Chemistry 1	5
BIOL 237	Principles of Human Anatomy and Physiology 1	4
ENG 102	English Composition 2	3
PHYS 181	General Physics 1	4
	Total Credits	**16**

Second Year—Winter Semester

CHEM 214	Organic Chemistry 2	5
BIOL 238	Principles of Human Anatomy and Physiology 2	4
PHYS 182	General Physics 2	4
Humanities*	*Select one General Education Humanities course*	3-4
	Total Credits	**16-17**

Second Year—Spring Session

BIOL 243	Microbiology	4
PHARM 201	Capstone—Portfolio Preparation	1
	*Select Social Science or Humanities courses if needed to fulfill MACRAO**	
	Total Credits	**5**

PROGRAM TOTAL 76-80 CREDITS

** MACRAO transfer agreement requires a minimum of 8 credits in more than one discipline for both Social Science and Humanities distribution areas. When completing MACRAO, 80 credits will be the minimum program total required.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss the options with a counselor or advisor. Number of credits may vary depending on the course selection. Completion of the pre-pharmacy program does not guarantee admission into a transfer institution's pharmacy program.

PHYSICAL EDUCATION FITNESS LEADERSHIP

Credentials

Fitness Leadership certificate	24 cr.
Fitness Leadership AAS degree	60-62 cr.

Major Description

The Fitness Leadership program is designed to begin preparing students for the work and challenges facing the kinesiology professional. Academic preparation in kinesiology provides the foundation for a wide range of careers in fields that are projected to grow, including, but not limited to, exercise physiologist, personal trainer, fitness manager, worksite wellness coordinator, physical therapist, physical therapist assistant, athletic trainer, and group exercise instructor. The Fitness Leadership programs meets the needs of both students seeking career training programs leading to an industry-accepted credential (e.g., personal trainer or group exercise instructor), and those seeking transfer to a four-year institution.

Students will gain an understanding of the principles of exercise physiology and motor development and have the opportunity to apply that knowledge to fitness assessment and exercise techniques. The entrepreneurial aspects of fitness careers will also be explored.

National Median Salaries for Physical Education Fitness Leadership-related positions: *(source: US BLS)*

Exercise Physiologist: $44,770 Athletic Trainer: $42,090 Fitness Trainers and Instructors: $31,720

Fitness Leadership Certificate

Schoolcraft program code # 1YC.00214

The certificate in Fitness Leadership prepares students for entry level positions in the fitness field. Students will have significant preparation toward certification testing as a personal trainer or group exercise instructor. The certificate coursework can later be incorporated in the associate degree if students are interested in furthering their education.

All courses are not offered each semester. Students should work with an academic advisor or counselor to set up a schedule that will work for them. Students who successfully complete all program courses qualify for a certificate of program completion.

SAMPLE SCHEDULE OF CLASSES

First Year—Fall Semester			**First Year—Winter Semester**		
BIOL 101	General Biology	4	BIOL 237	Principles of Anatomy and Physiology 1	4
PE 111	Introduction to Kinesiology	3	PE 202	Lifestyle Fitness and Wellness	2
PE 112	Introduction to Exercise Physiology	3	PE 143	Fitness Tests and Measurements	3
PE 121	First Aid and Personal Safety	2	PE 147	Exercise Techniques	3
	Total Credits	**12**		**Total Credits**	**12**

PROGRAM TOTAL 24 CREDITS

Fitness Leadership AAS Degree

Schoolcraft program code # AAS.00284

The associate degree in Fitness Leadership provides students with a solid foundation to begin a career in the fitness field. It offers a combination of theory and applied classes, combined with an internship in the fitness field. Students completing this program will be well positioned to transfer to a four-year institution in fields such as exercise science, kinesiology, athletic training, and sports management, among others. Students also will be well prepared to take national certification exams for personal fitness trainers and group exercise instructors.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF CLASSES

First Year—Fall Semester			**First Year—Winter Semester**		
BIOL 101	General Biology	4	BIOL 237	Principles of Anatomy and Physiology 1	4
PE 111	Introduction to Kinesiology	3	PE 143	Fitness Tests and Measurements	3
ENG 101	English Composition 1	3	PE 147	Exercise Techniques	3
PE 112	Introduction to Exercise Physiology	3	PE 202	Lifestyle Fitness and Wellness	2
	Total Credits	**13**		**Total Credits**	**12**

First Year—Spring/Summer Session

PSYCH 153	Human Relations	3
Mathematics*	*Select any general education mathematics class*	3-5
	Total Credits	**6-8**

Second Year—Fall Semester			**Second Year—Winter Semester**		
BIOL 238	Principles of Anatomy and Physiology 2	4	PE 212	Applied Exercise Physiology	3
PE 207	Facilities Operations	3	COMA 103	Fundamentals of Speech	3
ENG 102	English Composition 2	3	PE 225	Motor Development	3
BUS	*Select one*	3	PE 121	First Aid and Personal Safety	2
BUS 101	Introduction to Business		ELECTIVE**		2-3
BUS 103	Organizing a Small Business			**Total Credits**	**13-14**
BUS 120	Strategic Selling				
	Total Credits	**13**			

Second Year—Spring/Summer Session

PE 290	Fitness Leadership Internship	3
	Total Credits	**3**

PROGRAM TOTAL 60 – 63 CREDITS

**Students planning to transfer should take MATH 111, 119, or higher.*

***Recommended electives include any other PE class or BIOL 115 Nutrition. Students interested in group exercise may want to consider PE 115 Aerobic Dance Fitness and students interested in education may want to consider PE 240 Physical Education for Elementary Teachers. Students planning to transfer may want to consider an MTA approved SOCIAL SCIENCES course.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

PLASTIC TECHNOLOGY

Credentials

Plastic Technology Skills Certificate	16 cr.
Plastic Technology Certificate	30-32 cr.
Plastic Technology AAS degree	60-66 cr.

Major Description

Developed in conjunction with the area's leading plastic manufacturing companies, the Plastic Technology programs prepare students for employment in one of the largest manufacturing fields in the country. Plastic Technology courses in this program are taught by professionals in the industry, providing real-world experience so that students can acquire the working knowledge and skills to become a competent molding machine operator or technician. Students will learn techniques and processes involved in making and testing plastic parts as they gain hands-on experience with plastics manufacturing equipment.

National Median Salaries for Plastic Technology-related positions:

Plastic Technicians: $16.13 per hour *(source: US BLS)*

Plastic Technology Skills Certificate

Schoolcraft program code # CRT.00340

The Plastic Technology skills certificate introduces the student to the various processing techniques used to produce a finished plastic part. The student will also come away with knowledge of the different plastic materials most commonly used today. The program also includes an overview of the various quality improvement programs with an emphasis on teamwork and an overview of metal machining. This program will provide the student with the basic skills for employment at the entry level in the plastics industry.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must be completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
PLAST 130	Introduction to Plastic Materials	3	PLAST 131	Introduction to Plastic Processing	3
MATH 102	Technical Mathematics	4	MFG 102	Basic Machining Processes	3
	Total Credits	**7**	QM 107	Quality Planning and Team Building	3
				Total Credits	**9**

PROGRAM TOTAL 16 CREDITS

Plastic Technology Certificate

Schoolcraft program code # 1YC.00219

The Plastic Technology certificate addresses the basic competencies and skills needed to meet the requirements for employment in the plastics industry. The program content is designed to train the student who is new to the plastics industry, and also to update the skills of seasoned workers in the plastic industry, with the most current technology. The curriculum will prepare the student to be employed in a quality or testing lab, as a production technician, or entry level process technician.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student. All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must be completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF CLASSES

First Year—Fall Semester			**First Year—Winter Semester**		
PLAST 130	Introduction to Plastic Materials	3	MFG 102	Basic Machining Processes	3
MATH 102	Technical Mathematics	4	PLAST 140	Plastic Materials Testing	3
QM 107	Quality Planning and Team Building	3	PLAST 150	Plastic Injection Molding Technology	3
PLAST 131	Introduction to Plastic Processing	3	CAD 103	Engineering Graphics	3
	Total Credits	**13**		**Total Credits**	**12**

First Year—Spring/Summer Session

PLAST 160	Process Control Systems for Plastic Manufacturing	3
Elective	*Select one*	2-4
	Total Credits	**5-7**

PROGRAM TOTAL 30-32 CREDITS

Electives

CAD 211	CATIA – Level 1	4
CAD 221	SolidWorks – Level 1	4
MET 160	Composite Materials	3

MET 290	Metallurgy Internship	3
MFG 103	Basic Computer Numerical Control	3
MFG 105	Manufacturing Processes	4
MFG 110	Geometric Dimensioning and Tolerancing with Inspection	3
OSH 111	Occupational Safety and Health for General Industry	2

Plastic Technology AAS Degree

Schoolcraft program code # AAS.00220

The Plastic Technology AAS degree is designed to provide the student with skills in many of the critical facets of plastic manufacturing. The program includes the study of the most widely used thermoplastic processes with an emphasis on injection molding and on the most frequently used thermoplastic materials. Topics covered include: thermoplastic process troubleshooting, plastic materials and applications, mold/part design, quality improvement programs, process controls, CAD and metal finishing. The combined educational background will give the student an opportunity to meet the many needs of today's plastic manufacturing industry. This includes employment as a mold or part designer, process technician or entry level plastic process engineer.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for an associate in applied science degree. All program required courses must be completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF CLASSES

First Year—Fall Semester

PLAST 130	Introduction to Plastic Materials	3
MATH 102	Technical Mathematics	4
QM 107	Quality Planning and Team Building	3
PLAST 131	Introduction to Plastic Processing	3
	Total Credits	**13**

First Year—Winter Semester

MFG 102	Basic Machining Processes	3
PLAST 140	Plastic Materials Testing	3
PLAST 150	Plastic Injection Molding Technology	3
CAD 103	Engineering Graphics	3
	Total Credits	**12**

First Year—Spring/Summer Session

PLAST 160	Process Control Systems for Plastic Manufacturing	3
ENG 100	Communication Skills	3
	Total Credits	**6**

Second Year—Fall Semester

PLAST 210	Plastic Mold Design Fundamentals	3
PLAST 220	Plastic Part Design	4
ENG 116	Technical Writing	**3**
CHEM 104	Fundamentals of Chemistry	4
Elective	*Select one from list below*	2-4
	Total Credits	**15-17**

Second Year—Winter Semester

PLAST 240	Advanced Plastics Processing	3
PLAST 250	Advanced Injection Molding	3
Social Science	*Select General Education Social Science course(s)*	3-4
PSYCH 153	Human Relations *(recommended)*	
Humanities	*Select General Education Humanities course(s)*	2-4
COMA 103	Fundamentals of Speech *(recommended)*	
Elective	*Select one from list below*	3-4
	Total Credits	**14-18**

PROGRAM TOTAL 60-66 CREDITS

Select two courses from the classes listed below to fulfill the elective requirement:

CAD 211	CATIA – Level 1	4
CAD 212	CATIA - Surfacing	4
CAD 221	SolidWorks – Level 1	4
MET 160	Composite Materials	3
MET 290	Metallurgy Internship	3
MFG 103	Basic Computer Numerical Control	3
MFG 105	Manufacturing Processes	4
MFG 110	Geometric Dimensioning and Tolerancing with Inspection	3
OSH 111	Occupational Safety and Health for General Industry	2
WELD 110	Introduction to Welding Basics for fabrication	3
WELD 118	Adhesive Joining Technology	4

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

SOUND RECORDING TECHNOLOGY

Credentials

Sound Recording Technology Certificate	32 cr.
Sound Recording Technology AAS Degree	64-66 cr.

Major Description

If you want to pursue a career in Sound Recording or enhance your personal recording skills, Schoolcraft offers both an associate degree and a certificate program that can help you reach your recording goals. Our options include:

- An associate degree that prepares students to earn a bachelor's degree in recording engineering at a four-year institution or to work at a recording studio or other media outlet.
- A certificate program that provides students skills to enable them to work at a recording studio or to improve live recording in their home studio.

Credits earned in the certificate program may also count towards an associate in applied science degree or transfer toward a bachelor's degree at a four-year institution.

National Median Salaries for Sound Recording Technology-related positions: *(source: US BLS)*

Audio Equipment Technician: $41,850

Sound Engineering Technician: $46,310

Sound Recording Technology Certificate

Schoolcraft program code # 1YC.00144

The sound recording technology certificate will provide the student with skills important to the apprentice at recording studios and for quality home studio production. The program will prepare the student to understand the functions of audio signals and the sound reproduction equipment. The program will also acquaint the student with emerging audio formats.

Listening in the manner of a recording engineer will be stressed as well as some fundamental music skills important to the musician's point of view. Technological changes directly related to the recording industry are frequently introduced. The program is committed to staying current and will help the student understand new directions in technology.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

MUSIC 104	Basic Materials in Music Theory	3	SRT 110	Keyboard Skills for Recording Engineers	1
MUSIC 105	Music Appreciation	3	MUSIC 171	Music Technology 1	3
MUSIC 121	Class Piano 1	2	MUSIC 172	Music Technology 2	3
SRT 121	Basic Sound and Recording Techniques 1	3	SRT 122	Basic Sound and Recording Techniques 2	3
ELECT 131	Basic Measurement and Reporting Skills	3	SRT 150	Ear Training for Recording Engineers	2
	Total Credits	**14**		**Total Credits**	**12**

First Year—Winter Semester

First Year—Spring Session

SRT 221	Advanced Audio Production 1	3	SRT 222	Advanced Audio Production 2	3
	Total Credits	**3**		**Total Credits**	**3**

First Year—Summer Session

PROGRAM TOTAL 32 CREDITS

Sound Recording Technology AAS Degree

Schoolcraft program code # AAS.00244

The recording technology associate degree program is designed to prepare the student for transfer to institutions offering a bachelor's degree in recording engineering or for apprenticeships at recording studios and various media venues. The program will teach the student the fundamentals and techniques relative to live concert and studio recording.

Understanding the musical perspective is an important focus of the program. The required music courses will assist the recording engineer in better understanding what the performing musician is experiencing and will in turn improve the recording outcome.

Technological changes directly related to the recording industry are frequently introduced. The program is committed to staying current and will help the student understand new directions in the technology.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

HUM 106	Introduction to Art and Music	1	Music	*Select one*	2-3
MUSIC 104	Basic Materials in Music Theory	3	MUSIC 117	Choir 1	
MUSIC 121	Class Piano 1	2	MUSIC 168	Synthesizer Ensemble 1	
SRT 121	Basic Sound and Recording Techniques 1	3	MUSIC 141	Wind Ensemble 1	
MATH 113	Intermediate Algebra for College Students	4	MUSIC 142	Jazz Band 1	
ENG 101	English Composition 1	3	SRT 110	Keyboard Skills for Recording Engineers	1
	Total Credits	**16**	SRT 122	Basic Sound and Recording Techniques 2	3
			PHYS 123	Applied Physics	5
			SRT 150	Ear Training for Recording Engineers	2
				Total Credits	**13-14**

First Year—Spring/Summer Session

ENG 102	English Composition 2	3
COMA 103	Fundamentals of Speech	3
	Total Credits	**6**

Second Year—Fall Semester

Second Year—Winter Semester

MUSIC 171	Music Technology 1	3	MUSIC 138	Sight Singing and Ear Training 2	2
SRT 221	Advanced Audio Production 1	3	Music	*Select one*	3
MUSIC 137	Sight Singing and Ear Training 1	2	MUSIC 105	Music Appreciation	
ELECT 131	Basic Measurement and Reporting Skills	3	MUSIC 149	Popular Music Culture in America	
Social Science	*Select one*	3-4	MUSIC 172	Music Technology 2	3
PSYCH 153	Human Relations		SRT 222	Advanced Audio Production 2	3
PSYCH 201	Introductory Psychology		GEOG 133	World Regional Geography	4
	Total Credits	**14-15**		**Total Credits**	**15**

PROGRAM TOTAL 64-66 CREDITS

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

THEATRE

Credentials

Theatre Program AA degree	60 cr.

Major Description

Schoolcraft's theatre program balances live stage experience with liberal arts classes that may count toward an associate in arts degree and transfer toward a bachelor's degree at a four- year institution. Whether you want to be on stage or behind the scenes, the program provides students with a solid theatrical background, including:

- Acting
- Stagecraft
- Lighting
- Stage Makeup
- Theatre History

Students can gain additional experience by taking part in the two on-campus theatre productions each year and prepare to join the many Schoolcraft graduates who now work in the theatre, television and film industries.

Theatre Program AA Degree

Schoolcraft program code # AA.00042

The theatre program is designed to provide students with a balanced curriculum of theatre and liberal arts courses that will prepare them to transfer to a four-year institution. This program includes performance and the technical aspects of theatre, including theory and practical experiences in theatre.

All courses are not offered each semester. Students should work with an academic advisor or counselor to set up a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in arts degree.

Note: The Theatre Department has adopted a dinner-theatre format for production with two plays produced annually.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester			**First Year—Winter Semester**		
ENG 101	English Composition 1	3	ENG 102	English Composition 2	3
BIOL 101	General Biology	4	THEA 121	Theatre Activities 2	1
THEA 120	Theatre Activities 1	1	THEA 207	Stagecraft and Lighting	3
THEA 210	Acting 1—Theory and Elements	3	THEA 211	Acting 2—Theory and Elements	3
THEA 101*	Introduction to Theatre	3	MATH	*Select any four-credit 100-level course*	4
	Total Credits	**14**		**Total Credits**	**14**
Second Year—Fall Semester			**Second Year—Winter Semester**		
THEA 220	Theatre Activities 3	1	THEA 221	Theatre Activities 4	1
COMA 103	Fundamentals of Speech	3	THEA 241*	Oral Interpretation of Literature	3
HIST 153	Contemporary America—U.S. History	3	ENG 245	Introduction to Literature—Drama	3
ENG 248*	Introduction to Literature—Shakespeare	3	PSYCH 201	Introductory Psychology	4
POLS 105	Survey of American Government	3	THEA 232*	History of Theatre 2	3
THEA 231*	History of Theatre 1	3	THEA 204	Stage Makeup	2
	Total Credits	**16**		**Total Credits**	**16**

PROGRAM TOTAL 60 CREDITS

** These classes are offered on a rotational basis. Contact Liberal Arts office for current offerings.*

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

WELDING TECHNOLOGY

Credentials

Welding Sculpture skills certificate	19 cr.
Fabrication certificate	35-36 cr.
Pre-Apprenticeship certificate	27 cr.
Fabrication Technology AAS degree	61-67 cr.

Major Description

Schoolcraft's welding program provides students with both hands-on welding skills and knowledge of metallurgy and other materials. The program offers three welding certificates in addition to an associate degree in applied science. Class sizes are limited so instructors can work closely with students to provide hands-on training and relay knowledge of analytical skills required by modern industrial technology.

- The welding fabrication certificate prepares students for jobs involving metal inert gas and tungsten inert gas welding, as well as providing knowledge of plasma, arc and oxy-gas cutting technologies.
- Schoolcraft's welding joining technology associate in applied science degree prepares students for a job in industrial, prototype and machine tool building, heavy equipment, construction and emerging green and sustainable technologies.
- The welding pre-apprenticeship certificate, through a partnership with local trade unions, will help ensure that students have the skills, knowledge and training necessary to be safe on the jobsite, competitive in the workplace and satisfied in their careers.
- The welding sculpture skills certificate helps professional sculptures and aspiring welders gain knowledge and skills applicable in today's art world and welding industry.

National Media Salaries for Welding Technology-related positions *(source: US BLS)* Average Annual Salary: $36,300

Welding Sculpture Skills Certificate

Schoolcraft program code # CRT.00327

The focus of both the welding industry and sculpture is fabrication. Because sculpture requires artists to use materials, tools and skills, it is natural for artists and the welding industry to merge. This welding sculpture skills certificate helps the professional sculptor or the aspiring welder gain the knowledge and skills needed in today's art world and welding industry.

Students learn basic and advanced skills in welding with the MIG and TIG welding processes as well as many fabrication techniques used in today's industry. They learn how to think and work creatively with these processes and how to conceptually and objectively discuss their work. New fabrication processes are explored to give the student an understanding of how alternative methods of fabrication satisfy different needs. This certificate creates an artistic option for entry into the welding fabrication certificate and the welding joining technology associate degree.

Students are required to purchase protective clothing, protective (safety) shoes and eye protection equipment.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Stu- dents who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

SAMPLE SCHEDULE OF COURSES

First Year—Spring Session

WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 112	Contemporary Metal Sculpture 1	3
	Total Credits	**6**

First Year—Fall Semester

WELD 209	Contemporary Metal Sculpture 2	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
	Total Credits	**6**

First Year—Winter Semester

WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./T.I.G.)	3
WELD 208	Advanced Metal Sculpture	4
	Total Credits	**7**

PROGRAM TOTAL 19 CREDITS

Welding: Fabrication Certificate

Schoolcraft program code # 1YC.00127

The welding fabrication program prepares students for employment under classifications such as welders and/or industrial fabrications. The program includes joining materials, using weldments, special techniques, equipment and other recognized fastening methods. Students acquire skills in the broad categories of welding and fabrication with added emphasis upon support technical subjects.

Students are required to purchase protective clothing, protective (safety) shoes and eye protection equipment.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester

WELD 110	Introduction to Welding Basics for Fabrication	3
WELD 113	Shielded Metal Arc Welding (SMAW)	3
WELD 115	Gas Metal Arc Welding (GMAW/MIG)	3
WELD 119	Gas Tungsten Inert Arc Welding(GTAW/TIG)	3
	Total Credits	**12**

First Year—Winter Semester

Mathematics*	*Select any General Education Mathematics Course*	3-4
MATH 102	Technical Mathematics (recommended)	
WELD 120	Advanced Processes-Stick Electrode and MIG Welding	3
WELD 130	Advanced Processes—Gas Tungsten	4
MET 102	Introduction to Materials Science	3
	Total Credits	**12-13**

First Year— Spring Session **First Year—Summer Session**

WELD 205	Welder's Print Reading	2	WELD 206	Welding Inspection and Qualification	2
Exam Preparation**	*Select from list*	3	WELD 223	Fabrication	4
	Total Credits	**5**		**Total Credits**	**6**

PROGRAM TOTAL 35-36 CREDITS

****Exam Preparation: (Select one)**

WELD 210	Preparation for Welder Certification in Shielded Metal Arc Welding (S.M.A.W.)	3
WELD 211	Preparation for Welder Certification in Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
WELD 212	Preparation for Welder Certification in G.T.A.W./T.I.G)	3
WELD 214	Preparation for Welder Certification in Pipe Welding	3
WELD 225	Pre-Apprenticeship Welder Certification	3

Welding: Pre-Apprenticeship Certificate

Schoolcraft program code # 1YC.00129

The road to becoming a welding Journeyman starts with apprenticeship training. Schoolcraft College accomplishes that mission by providing training, leadership, and partnership with local trade unions in order to uphold union values and the principles of service and professionalism. Coursework will prepare students for union apprenticeship by providing instruction in fundamental welding equipment and techniques, project planning, layout, fabrication, safety and technical math. Students completing the coursework successfully will also earn American Welding Society certification in at least one welding procedure. The pre-apprenticeship certificate will help ensure that students have the skills, knowledge, and training necessary to be safe on the jobsite, competitive in the workplace and satisfied in their careers. This certificate creates an option for entry into the welding fabrication certificate and the welding joining technology associate degree.

Students are required to purchase protective clothing, protective (safety) shoes and eye protection equipment.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester **First Year—Winter Semester**

WELD 110	Introduction to Welding Basics for Fabrication	3	MATH 102	Technical Mathematics	4
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3	WELD 205	Welder's Print Reading	2
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3	WELD 223	Fabrication	4
WELD 120	Advanced Processes-Stick Electrode and M.I.G Welding	3	WELD 225	Pre-Apprenticeship Welder Certification	3
	Total Credits	**12**	OSH	*Select one*	2
			OSH 111	Occupational Safety and Health for General Industry	
			OSH 112	Occupational Safety and Health for Construction (recommended)	
				Total Credits	**15**

PROGRAM TOTAL 27 CREDITS

Exams for above certificate will also be provided on an individual basis.

Welding: Fabrication Technology AAS Degree

Schoolcraft program code # AAS.00082

There is an ever increasing need for persons today that possess skills, both in welding and metallurgy. Materials of industry and new technology require highly skilled persons that understand material sciences, metallurgy, and the joining processes used to produce optimum quality fabrications. The quality conscience industry of today demands certified people that can perform tasks from the simplest, to more complex technical applications. The courses selected in this program will give the student the required skills needed to perform, both hands on and analytical tasks required by modern industrial technology.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

Students seeking transfer to a baccalaureate program should request transfer guides provided by the department.

SAMPLE SCHEDULE OF COURSES

First Year—Fall Semester **First Year—Winter Semester**

ENG 100	Communication Skills	3	ENG 116	Technical Writing	3
MET 103	Introduction to Materials Science	3	Mathematics	*Select any General Education Mathematics Course*	3-4
WELD 110	Introduction to Welding Basics for Fabrication	3		MATH 102 Technical Mathematics (recommended)	
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3	WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./T.I.G.)	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3	WELD 120	Advanced Processes-Stick Electrode and M.I.G Welding	3
	Total Credits	**15**		**Total Credits**	**12-13**

First Year—Spring Session

WELD 205	Welder's Print Reading	2	WELD 206	Welding Inspection and Qualification	2
Social Science	Select General Education Social Science course(s)	3-4		**Total Credits**	**2**
PSYCH 153	Human Relations (recommended)				
	Total Credits	**5-6**			

First Year—Summer Session

Second Year—Fall Semester

MFG 102	Basic Machining Processes	3	Elective*	Select from list	3-4
WELD 130	Advanced Processes—Gas Tungsten	3	WELD 223	Fabrication	4
OSH	*Select one*	2	WELD 262	Welding Metallurgy	4
OSH 111	Occupational Safety and Health for General Industry		Science	*Select General Education Science course(s)*	3-5
OSH 112	Occupational Safety and Health for Construction (recommended)			**Total Credits**	**13-16**
Humanities	*Select General Education Humanities course(s)*	3-4			
COMA 103	Fundamentals of Speech (recommended)				
	Total Credits	**11-12**			

Second Year—Winter Semester

Second Year—Spring Session

Exam Preparation**	*Select from list*	3
	Total Credits	**3**

PROGRAM TOTAL 61-67 CREDITS

***Electives**

WELD 290	Welding Internship	3
WELD 118	Adhesive Joining Technology	4
WELD 240	Computer Numerical Control (CNC) Shape Cutting and Automation	4

****Exam Preparation: (Select one)**

WELD 210	Preparation for Welder Certification in Shielded Metal Arc Welding (S.M.A.W.)	3
WELD 211	Preparation for Welder Certification in Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
WELD 212	Preparation for Welder Certification in G.T.A.W./T.I.G	3
WELD 214	Preparation for Welder Certification in Pipe Welding	3
WELD 225	Pre-Apprenticeship Welder Certification	3

Exams will also be provided on an individual basis.

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

Course Descriptions

ACCT 103 Introduction to Accounting (4-0) 4 Cr. Hrs.

Prerequisites: None.

In this course you will learn about the basic accounting cycle for a sole proprietorship in the service or merchandising industry. You will account for cash, sales, purchases, payroll and payroll taxes.

ACCT 138 Income Tax Preparation (2-0) 2 Cr. Hrs.

Prerequisites: None.

This is an introductory course in Federal and Michigan individual income tax laws and return preparation. Special emphasis will be given to Federal Tax Form 1040 with accompanying Schedule A (itemized deductions). In addition, the course will include preparation of Michigan Tax Form MI-1040 and City of Detroit returns.

ACCT 139 Michigan Taxes (2-0) 2 Cr. Hrs.

Prerequisites: None.

This is an introductory course in Michigan personal and business taxes. In addition, the individual income taxes of several Michigan cities will be covered. The course provides both non-accounting and accounting majors with knowledge of the Michigan tax structure. Special emphasis will be on regulations and tax requirements for income taxes, sales and use taxes, unemployment taxes, business tax and real and personal property taxes. Students will prepare tax returns while reviewing tax planning strategies.

ACCT 201 Principles of Accounting 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.
Recommended: CIS 120.

In this course, you will learn the principles of accounting with emphasis on the accounting cycle for a sole proprietorship in the service and merchandising business. You will apply internal controls to an accounting system, account for cash, accounts receivable, bad debts, inventories, long lived assets, current liabilities and payroll. In addition, you will demonstrate how to account for partnerships. This course will integrate a Web-based learning system which requires the use of a computer to complete some of the learning activities and assessments. This course MAY also include the use of Excel.

ACCT 202 Principles of Accounting 2 (4-0) 4 Cr. Hrs.

Prerequisites: ACCT 201 and CIS 120.

This course is a continuation of Accounting 201 expanding your exposure to accounting principles, financial statements, methods and applications. In this course you will focus on accounting for corporations, stockholder's equity, liabilities and investments. You will prepare the statement of cash flows. You will analyze and interpret financial statements and other accounting information used in making decisions. You will also explore managerial accounting and its applications in planning and controlling costs. This course will integrate a Web-based learning system which requires the use of a computer to complete some of the learning activities and assessments. This course MAY also include the use of Excel.

ACCT 205 Accounting Internship (1-12/40) 3 Cr. Hrs.

Prerequisites: ACCT 201 with a minimum grade of 3.0 and consent of department and an overall GPA of 2.5.

This is an applied course within Occupational Programs specializing in the field of accountancy and is a cooperative assignment for students who have completed the prerequisites for this course. Employment will be approximately 12 to 40 hours per week off-campus at the employer's location within an accounting department. The final grade will be based on a joint evaluation by the college and the employer. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement. Department permission is required before registering for this course. The selection of eligible students to register for the course is a competitive process that includes testing, submission of a resume with a cover letter and interviews.

ACCT 221 Intermediate Accounting 1 (4-0) 4 Cr. Hrs.

Prerequisites: ACCT 202.

This course further explores these accounting principles used by publicly traded companies, including the methods used to measure and report the financial transactions of corporations. The course focuses on the valuation of assets, such as cash and receivables, investments, inventory and operational assets, but will also include preparation of financial statements, review of financial disclosures and measurement of income and time value of money concepts.

ACCT 222 Intermediate Accounting 2 (4-0) 4 Cr. Hrs.

Prerequisites: ACCT 202.

In this course you will learn the current accounting methods for liabilities, bond amortization, leases, pensions, income taxes,

shareholders' equity and stock based compensation. You will prepare the statement of cash flows and statement of shareholders' equity. In addition, you will learn to allocate income tax expense and compute earnings per share information.

ACCT 226 Cost Accounting (4-0) 4 Cr. Hrs.

Prerequisites: ACCT 202 and CIS 180.
Recommended: ACCT 263.

Concepts of cost accounting as a management tool for control and planning will be introduced. Actual and standard cost methods as applied to job and process cost systems; accounting for materials, labor and manufacturing overhead; direct costing method; and cost accounting projects will be covered.

ACCT 238 Federal Tax Accounting (4-0) 4 Cr. Hrs.

Prerequisites: ACCT 201 recommended by accounting faculty.

Federal income tax laws with emphasis on the regulations that relate to individuals and small business including state and local tax implications will be addressed. Preparation of tax forms and introduction to tax research are also addressed in this course.

ACCT 262 Payroll Accounting (3-0) 3 Cr. Hrs.

Prerequisites: ACCT 201 and CIS 120 or knowledge of Excel and Word.

In this course you will gain first-hand experience in calculating payroll, completing payroll taxes, and preparing payroll records and reports. You will cover the various phases of the Social Security Taxes, Federal Income Taxes, State Income Taxes and Unemployment Compensation Insurance. You will complete a manual and computerized payroll simulation.

ACCT 263 Computerized Accounting Using QuickBooks (3-0) 3 Cr. Hrs.

Prerequisites: ACCT 103 or ACCT 201.
Recommended: CIS 120.

In this course, you will gain hands on experience in setting up an accounting information system for a small business using QuickBooks software. This course will apply the financial accounting concepts learned in your previous courses using the QuickBooks Software. Using the software, you will create vendor, customer and employee accounts; record transactions in special purpose journals and the general ledger; create invoices; process payroll; create and print reports; and perform bank reconciliations.

ACCT 330 Managerial Accounting for a Food Service Operation (3-0) 3 Cr. Hrs.

Prerequisites: ACCT 103 or ACCT 201 and CIS 120.

In this course you will apply managerial accounting concepts utilized in planning, analyzing and interpreting the results of a business within a food service operation. This course will include: operating budgets, cost controls for inventory, labor and other expense, variance analysis, financial performance evaluation and problem solving. This course will integrate web-based learning tools and spreadsheet applications.

AHE 101 Introduction to Healthcare (1-0) 1 Cr. Hrs.

Prerequisites: None.

This course provides a comprehensive review of the healthcare industry. Trends and changes related to healthcare facilities such as acute care hospitals, specialty hospitals, nursing homes, health maintenance organizations, hospice and home healthcare will be covered. The course will also deal with the impact and use of computers in the delivery and documentation of healthcare and the role of the medical professional in response to the healthcare delivery system.

ANTH 112 Introduction to Anthropology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides an introduction to the origin and diversity of humans, which includes the evolution of humans and their cultures, contemporary cultural diversity, linguistics and applied anthropology. Biological and cultural adaptations are emphasized.

ANTH 117 Introduction to Archaeology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a general survey of archaeology and includes an overview of the history of the field and the basic theories and methods employed in the study of archaeological cultures. Cultures from around the world are used as examples.

ANTH 120 Introduction to Physical Anthropology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides a survey of biological anthropology – the study of human beings and their ancestors within an evolutionary framework. The biocultural approach highlights the ways biology, culture and behavior interact. We will cover the basics of genetics and evolutionary theory; study primate physical characteristics and social behaviors; and investigate human biological variation and adaptation to the environment. This evidence will be used to trace human evolution: from the earliest primates to the first bipedal hominids to modern humans.

ANTH 201 Cultural Anthropology (3-0) 3 Cr. Hrs.

Prerequisites: None.

A comparison of the ways of life for societies worldwide using anthropological theory and methods is provided in this course. Basic institutions of human society such as kinship, religion, law, politics and economics are examined to provide a better understanding of the diversity of contemporary societies. Course focuses on non-Western societies.

ANTH 211 Myth, Magic, World Religions (3-0) 3 Cr. Hrs.

Prerequisites: ANTH 112 or ANTH 201 recommended.

This course will take an anthropological perspective to the study of religions which will include indigenous religions and religions that originated in Asia, India and the Middle East. The role of contemporary religious movements in a rapidly changing world will be examined.

ANTH 214 Native American Traditions (3-0) 3 Cr. Hrs.

Prerequisites: ANTH 112 or ANTH 201 recommended.

This course provides a survey of Native American cultures from both Native and non-Native perspectives. Social, economic, religious and artistic traditions will be examined. Course content includes a review of prehistoric origins as well as an evaluation of the effects of centuries of contact with people from Europe, Africa and Asia.

ARB 101 Elementary Arabic 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is intended for students who have no previous education in Arabic. The course will cover basic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through activities, emphasis will be placed on oral proficiency and communication. An appreciation of the cultures of the Middle East will be an integral part of the course.

ARB 102 Elementary Arabic 2 (4-0) 4 Cr. Hrs.

Prerequisites: ARB 101 with a grade of 2.0 or better or one year of high school Arabic or consent of instructor.

This course is a continuation of ARB 101 and continues to review the basic Arabic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of the cultures of the Middle East will be an integral part of the course.

ARB 201 Intermediate Arabic 1 (4-0) 4 Cr. Hrs.

Prerequisites: ARB 102 with a grade of 2.0 or better or two years of high school Arabic or consent of instructor.

This course is a continuation of ARB 102 and continues to cover grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of the cultures of the Middle East will be an integral part of the course.

ARB 202 Intermediate Arabic 2 (4-0) 4 Cr. Hrs.

Prerequisites: ARB 201 with a grade of 2.0 or better or three years of high school Arabic or consent of instructor.

This course is a continuation of ARB 202 and continues to cover grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of the cultures of the Middle East will be an integral part of the course.

ART 113 Art Education (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: PSYCH 249.

This course is a study of child growth and development through creativity. Students will study techniques and materials appropriate for use at various elementary grade levels. Emphasis will be placed on methods to stimulate children's creative interests.

ART 115 Art History 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This art history course examines the development of western art from Prehistory through the 14th century with emphasis on various societies, artists and art forms including painting, sculpture and architecture.

ART 116 Art History 2 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This art history course examines the development of western art from the early Renaissance through contemporary art with emphasis on various societies, artists and art forms including painting, sculpture and architecture.

ART 120 Drawing: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course examines the elements of drawing in noted art works. Students study how artists use spatial and value relationships to create art and then summarize basic approaches to drawing and media.

ART 121 2D Design: Elements and Principles of Two-Dimensional Design (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course examines the elements and theories of two-dimensional design. Students investigate two-dimensional works of art for effective application of the elements and principles of design. In addition, color theory is studied.

ART 122 3D Design: Elements and Principles of Three-Dimensional Design (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides an introduction to the elements and principles of three-dimensional design. Students analyze three-dimensional works of art for the effective application of the elements and principles of three-dimensional design.

ART 127 Illustration: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 120 or consent of department.

This course introduces students to illustration as an art form. Students examine the theories, purposes, techniques and applications of illustration. Students study art works of professional illustrators on how they used various techniques to tell a story or express an idea.

ART 128 The Human Figure in Art 1: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 120 or consent of department.

This course introduces how the human for has been represented by various artists throughout history. In addition, students study the superficial muscular and skeletal systems of the human form as revealed by various contexts of light and shadow.

ART 133 Ceramics 1: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course introduces the theories, elements and applications that identify ceramics as an art form. Students study the basic techniques used by published clay artists and those in art history sources.

ART 134 Ceramics 2: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 133.

This course is a continuation of ART 133 where theories and elements comprising the art form of ceramics are interpreted. Students examine advanced techniques and materials utilized by published artists and those in art history sources.

ART 201 Art Appreciation (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides an introduction to the vast subject of visual art, including the effect of culture and history on the lives, aesthetics and creations of artists, and an exploration of technique and media employed by artists throughout time.

ART 216 Women in Art (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course explores the role of women in the history of Western art with emphasis on art forms including painting, sculpture and architecture. Special consideration is given to women as patrons, artists and subjects and their impact in each of these realms.

ART 221 Watercolor Painting 1: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: Consent of department.
Recommended: ART 120.

This course examines the fundamental theories, techniques and processes utilized in watercolor and water-based media. In addition, students study the elements watercolor artists incorporated into their published works of art.

ART 222 Watercolor Painting 2: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 221.

This course is a continuation of ART 221 where emphasis is on critiquing published works of art for watercolor and water-based media techniques and processes. Students also investigate how artists utilize the elements in watercolor and water-based media to create a variety of effects.

ART 228 The Human Figure in Art 2: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: Consent of department.
Recommended: ART 128.

This course furthers the study of the role of the human form in the history of art by analyzing modern works. In addition, students critique figure drawings of accomplished artists on how the superficial muscular and skeletal systems of the human form affect the surface topography in various contexts.

ART 231 Painting 1: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 120.
Recommended: ART 128.

This course introduces the student to painting as an art form. Students examine theories, techniques and processes utilized in abstract, conceptual and representational compositions of renowned artists.

ART 233 Ceramics 3: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 134.

This course is a continuation of ART 134 where theories and elements of ceramics as an art form are critiqued. Students analyze advanced techniques used by published clay artists when creating complex works of art.

ART 234 Ceramics 4: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 233.

This course is a continuation of ART 233 where multiple theories, elements and applications of ceramics are synthesized. In addition, students analyze and critique published complex ceramic works of art for theories, techniques and applications.

ART 235 Painting 2: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 231.

This course is a continuation of ART 231. Students will critique the techniques and processes utilized by published artists. In addition, students explore how artists develop a focused approach both thematically and technically in their work.

ART 246 Sculpture 1: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course explores sculptures as an art form in art history. Students study materials, processes and methods used to create important sculptural works, utilizing both traditional and experimental methods.

ART 247 Sculpture 2: Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: ART 246.

This course is a continuation of ART 246 where students analyze elements and techniques of renowned artists' sculptures. In addition, sculptural media and advanced techniques used in various forms are evaluated.

ART 248 Portfolio Preparation (1-0) 1 Cr. Hrs.

Prerequisites: ART 120 , ART 121 and one of the following: ART 128 , ART 133 , ART 221 , ART 231 or consent of department.

This class enables the student to prepare a portfolio tailored to the specific entrance requirements of art schools and Bachelor of Fine Art Programs offered at four-year colleges or universities. Strengths and weaknesses of existing student work will be addressed along with suggestions for possible further study to improve the content of the portfolio.

BDT 101 Brewing Science (2-2) 4 Cr. Hrs.

Prerequisites: Successful completion of high school biology. Students must be at least 18 years of age to take this course [MCL 436.1703 Section 703, (13)].
Recommended: BIOL 101. MATH 47.

This course is designed to cover concepts of biology, biochemistry, chemistry and physics that are key to brewing and distillation processes. Special attention will be given to the biology, chemistry and physics of the brewing process, including enzymatic and biochemical reactions associated with malting, mashing, fermentation and maturation. The byproducts of cellular metabolism, chemical reactions and physical processes that influence flavor development and flavor defects in finished craft beverages will be explored.

BDT 110 Brewhouse Operations and Technology (2-2) 4 Cr. Hrs.

Prerequisites: Students must be at least 18 years of age to take this course [MCL 436.1703 Section 703, (13)].
Recommended: BDT 101 or consent of department.

This course provides students with the knowledge and skills required to successfully plan, develop, maintain, manage and operate the facilities and specialized equipment in a commercial brewery. Production operation of a working brewery, safety, regulatory compliance and application of the brewing process to a commercial brewing operation will be the focus. Product development, large batch material handling, cleaning, sanitation and maintenance will also be covered. Content areas are covered in lectures, while practical skills are practiced in a brewery setting. The course requires the student to complete 30 lab hours which must be scheduled with the instructor outside of lecture time in the Production Brewery Lab.

BDT 120 Beer Styles and Flavors (2-0) 2 Cr. Hrs.

Prerequisites: Students must be at least 18 years of age to take this course [MCL 436.1703 Section 703, (13)].
Recommended: CM 210.

This course introduces the history of beer, beer styles and the factors contributing to flavor development and flavor defects. Focus will be given to understanding and evaluating foundation and modern beer styles and the role of ingredients and the brewing process on the final products' characteristics. Students will critically evaluate 50 beer styles as catalogued by the Beer Judge Certification Program, and their ingredients, using a sensory evaluation process.

BDT 140 Marketing and Operations Management (2-0) 2 Cr. Hrs.

Prerequisites: Students must be at least 18 years of age to take this course [MCL 436.1703 Section 703, (13)].

This course provides students with an introduction to the business of commercial alcoholic beverage production, its historical development and the planning and resources required to market and distribute brewed or distilled products. Emphasis is placed on the nature of the craft beverage market including trends that drive the industry and the consumer. The history of the 3-Tier System, Control State regulations and liquor control laws that shape the nature of manufacturing, distributing and retailing alcoholic beverages and their effects on marketing strategies are examined, including development of strategies and how to set appropriate levels of promotional effort, pricing and other considerations for generating sales.

BDT 210 Cellaring, Packaging and Quality Management (2-2) 4 Cr. Hrs.

Prerequisites: Students must be at least 18 years of age to take this course [MCL 436.1703 Section 703, (13)].
Corequisites: BDT 110.

This course will cover aspects of fermentation management, packaging and analytical techniques that result in a quality finished product. Management of the brewhouse systems, fermentation processes, finishing, carbonating, packaging and related quality management procedures are emphasized. Techniques and equipment used to assess quality are covered, with emphasis on managing the fermentation process from yeast pitching to final packaging.

BDT 220 Advanced Brewing and Distillation (2-2) 4 Cr. Hrs.

Prerequisites: BDT 101 , BDT 110 and Students must be at least 18 years of age to take this course [MCL 436, 1703 Section 703, (13)].

This course focuses on advanced brewing processes and the relationship of brewing to distillation. Specialty beer production, formula development and scaling, quality control and management of a craft beverage production facility are covered. Topics include original recipe development, brewing specialty beers using advanced brewing techniques, lab analysis, production techniques and packaging. The principles and production techniques involved in the distillation of grains, fruits and other fermented products associated with craft beverage production, distillation technology, sensory evaluation, quality control, engineering and craft distillery management are also covered.

BDT 230 Beverage Management and Service (1-3) 4 Cr. Hrs.

Prerequisites: Students must be at least 18 years of age to take this course [MCL 436.1703 Section 703, (13)].

This course introduces service and management of beverages served in hospitality operations, especially draft beer. The course is designed to give students the tools necessary in order to work in or manage a craft beer-centric restaurant, bar or brewery tasting room. Topics include the history of the 3-Tier System, Control State regulations and liquor control, beer service, procurement, beer styles, beer and food pairing, draft system selection, maintenance and troubleshooting, staff training and responsible alcohol service. Students prepare for and take the Cicerone® Certification Program's Beer Server Certificate exam and TIPS® ("Training for Intervention Procedures") alcohol server certification as part of this course. Lab hours include beer service in the American Harvest Restaurant.

BIOL 50 Basic Biology (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is offered to students who seek to acquire the necessary background and skills to successfully complete a college-level biology course such as General Biology (BIOL 101). Emphasis is placed on basic terminology and concepts that contribute to an understanding of the scientific process and biological principles such as the scientific method, basic chemistry, cell biology, metabolism, genetics, evolution, biological classification and ecology.

BIOL 100 Introduction to Biology (4-3) 4 Cr. Hrs.

Prerequisites: None.

This course introduces the non-science major to the concepts of modern biology and to the principles of scientific inquiry. Major concepts such as the scientific method, biological chemistry, organization of cells, energy transformation in living systems, DNA and inheritance, evolution, the diversity of life and ecology are examined. Emphasis is placed on processes common to all organisms, with special reference to humans. Related topics such as human evolution and human impacts on the environment will also be explored. This course provides the framework for making informed decisions regarding pertinent biological issues in society. Students participate in four hours of instruction and three hours of laboratory each week. Students going into allied health fields or majoring in science are required to take BIOL 101 or BIOL 120.

BIOL 101 General Biology (4-3) 4 Cr. Hrs.

Prerequisites: None.
Recommended: BIOL 50 or successful completion (2.0+) of introductory high school biology.

This course is a one-semester introductory course. This course introduces students to the scientific study of living organisms. Students will investigate biological concepts including the chemical basis of life, cell structure and function, metabolism, reproduction, genetics, evolution, biological diversity and classification, plant structure and function, animal structure and function

and ecology. Students attend four hours of lecture and three hours of laboratory each week. Science majors seeking to fulfill a two-semester introductory biology sequence should enroll in BIOL 120 and BIOL 130.

BIOL 103 Health Education (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course explores health and wellness including the effects of stress, physical fitness, nutrition, body weight, substance abuse, infectious diseases and environmental factors. Other topics will include sexuality, cardiovascular health, cancer, chronic health conditions and how to make informed decisions related to health.

BIOL 104 Conservation and Natural Resources (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course introduces the basic principles of conservation biology as they relate to our critical need as global citizens to preserve and protect biodiversity and natural resources. In addition to studying the causes of extinction; habitat loss and restoration; management of populations, communities and ecosystems; students also explore philosophical issues in conservation values and ethics. This interdisciplinary course integrates contributions from the fields of law, political science, economics, history and sociology into the fundamental biological principles of conservation. Practical applications, personal stewardship and globally sustainable solutions are emphasized.

BIOL 105 Basic Human Anatomy and Physiology (4-0) 4 Cr. Hrs.

Prerequisites: Successful completion of BIOL 50 or high school introductory general biology within the last five years.

This course introduces fundamental terminology and concepts that will enable students to acquire a basic understanding of the structure and function of the human body. The anatomy and physiology of the major human organ systems and their association with health and disease is explored. BIOL 105 is intended for students in allied health programs that do not require a laboratory course in human anatomy and physiology.

BIOL 114 Basic Human Nutrition (1-0) 1 Cr. Hrs.

Prerequisites: None.

This course provides a basic study of human nutrition with emphasis on scientific principles, metabolism and the requirements for nutrients. The role of nutrition in optimizing health throughout the human life cycle will be explored. Disease processes that require special nutritional support are studied.

BIOL 115 Nutrition (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides a study of the nature and role of nutrition with emphasis on the changing needs in the human life cycle. The relationship between nutrition and health will be explored. Topics such as vegetarianism, food fads and fallacies, obesity, weight control and food additives are studied.

BIOL 120 Principles of Biology 1 (4-3) 5 Cr. Hrs.

Prerequisites: CHEM 111 recommended. Successful completion of high school biology and chemistry within last five years.

This is the first course of a two-semester introductory biology sequence for students interested in transferring to a four-year institution to pursue a degree in biology or other science-related discipline. Together, BIOL 120 and BIOL 130 provide science majors with a comprehensive introduction to biology. In this course, students will attend four hours of lecture and three hours of lab each week to study the process of scientific inquiry, biochemistry, cell structure, membrane transport, metabolism, cell reproduction, molecular genetics, biotechnology, principles of inheritance and evolution.

BIOL 130 Principles of Biology 2 (4-3) 5 Cr. Hrs.

Prerequisites: BIOL 120 with 2.0+ grade point or consent of department.

This is the second course of a two-semester introductory biology sequence for students interested in transferring to a four-year institution to pursue a degree in biology or other science-related discipline. Together, BIOL 120 and BIOL 130 provide science majors with a comprehensive introduction to biology. In this course, students will attend four hours of lecture and three hours of lab each week to study the evolution and diversity of living organisms, plant and animal anatomy and physiology, animal behavior and ecology.

BIOL 140 Scanning Electron Microscopy (1-3) 4 Cr. Hrs.

Prerequisites: None.

This course emphasizes the principles and modes of operation of the scanning electron microscope and X-ray analysis systems, electron-specimen interactions, elemental analysis, effects of microscope variables on images, image processing, routine maintenance, the use of microscope accessories and digital outputs. In the laboratory, students will prepare and examine inorganic and organic specimens using the secondary, backscatter and variable pressure detectors of the SEM. Students complete a project consisting of the preparation, imaging and analysis of a biological specimen.

BIOL 236 Human Anatomy and Physiology (4-3) 5 Cr. Hrs.

Prerequisites: None.
Recommended: BIOL 101 is strongly recommended. Institutional research has shown that students who successfully complete BIOL 101 prior to taking BIOL 236 perform significantly better in the course.

This one-semester course covers the gross and microscopic anatomy and physiology of the integumentary, skeletal, muscular, nervous, special senses, endocrine, circulatory, lymphatic, immune, respiratory, digestive, urinary and reproductive systems of the human body. Weekly instruction includes four hours of lecture and three hours of laboratory. The laboratory portion includes the use of prepared histological slides, anatomical models, bones, dissection of preserved specimens, blood typing, spirometry, urinalysis and blood pressure measurement. Students will also have an opportunity to examine a dissected cadaver.

BIOL 237 Principles of Human Anatomy and Physiology 1 (3-2) 4 Cr. Hrs.

Prerequisites: None.
Recommended: BIOL 101 is strongly recommended. Institutional research has shown that students who successfully complete BIOL 101 prior to taking BIOL 237 perform significantly better in the course.

This is the first course in a two-semester sequence in the comprehensive study of the structure and function of the human body. Emphasis will be placed upon the anatomy and physiology of the integumentary, skeletal, muscular, nervous and endocrine systems. Labs reinforce units of study and include the use of prepared histological slides, anatomical models, bones, dissection of preserved specimens and computer simulations. In addition, students will have the opportunity to examine a dissected cadaver to enhance anatomical studies. BIOL 237 and BIOL 238 are designed for the student who plans to pursue a career in the health or biomedical field. Students attend three hours of lecture and two hours of lab each week.

BIOL 238 Principles of Human Anatomy and Physiology 2 (3-2) 4 Cr. Hrs.

Prerequisites: BIOL 237.

This is the second course in a two-semester sequence (continuation of BIOL 237) in the comprehensive study of the structure and function of the human body. Emphasis will be placed upon the anatomy and physiology of the circulatory, lymphatic, respiratory, digestive, urinary and reproductive systems. Labs reinforce units of study and include the use of prepared histological slides, anatomical models, dissection of preserved specimens, blood pressure measurement, spirometry, urinalysis and computer simulations. In addition, students will have the opportunity to examine a dissected cadaver to enhance anatomical studies. Students attend three hours of lecture and two hours of lab each week.

BIOL 240 Anatomy and Physiology Review (2-0) 2 Cr. Hrs.

Prerequisites: BIOL 237 and BIOL 238 or BIOL 236 or equivalent or BIOL 105 or consent of instructor.

This course is a review of the anatomy and physiology of the human body with special emphasis on the physiology of the integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems. This course is designed for students entering biomedical programs that require a review of the basic anatomy and physiology of the human body.

BIOL 243 Microbiology (3-4) 4 Cr. Hrs.

Prerequisites: BIOL 101.

This course covers the world of microbes including microbial structures and function, biochemistry, metabolism, genetics, control of microbial growth, infectious diseases, immunity, classification and epidemiology. Laboratory techniques commonly utilized in microbiology are introduced, including microscope use, bacterial smears, staining methods, aseptic techniques, isolation of pure cultures, identification of unknown microorganisms and antibiotic testing.

BIOL 290 Life Science Laboratory Techniques Internship (2-12/40) 3 Cr. Hrs.

Prerequisites: CHEM 111 and BIOL 120 or consent of department. Students must be at least 18 years of age to take this course.

This course prepares students to conduct life science-based laboratory experiments. In the laboratory, students will learn core biological laboratory skills and techniques that they would use when conducting life science research. This will include lab safety and record keeping, nucleic acid and protein analysis, preparation of solutions and using analytical instrumentation. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement.

BIOL 295 Life Science Laboratory Directed Research Internship (2-12/40) 3 Cr. Hrs.

Prerequisites: BIOL 290. Students must be at least 18 years of age to take this course.

This course focuses on applying life science techniques acquired during Life Science Laboratory Techniques to address valuable and real-world investigational questions. Students will cooperate as a team to achieve the development of novel and practical solutions for important challenges in the areas of cancer and bioenergy. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement.

BMET 116 Biomedical Instrumentation Terminology and Safety 1 (2-1) 3 Cr. Hrs.

Prerequisites: Acceptance into the Biomedical Engineering Technology Program (BMET).

Students will acquire a knowledge of the language common to electronics and the medical profession based on spelling, pronunciation and definition of words and terms related to anatomy, medical equipment, electronic test equipment and safety. They will become acquainted with the fundamentals of medical equipment and testing concepts. Students will be introduced to the field of Biomedical Engineering Technology as a career.

BMET 125 Laser Safety Concepts (3-0) 3 Cr. Hrs.

Prerequisites: MATH 53 or equivalent and BMET 116.

This course has been designed as a basic introduction to medical applications in laser fundamentals and safety. Students will study the three properties of laser light: monochromatic, directionality, and coherency. Biomedical concerns of laser hazards involving the eye, skin, toxicity, electrical and fire will be covered. Types of site and skin damages that can occur when exposed to laser wavelength will be explored. Laser system hazards classifications and safety standards will be reviewed in addressing potential hazards, necessary safety restrictions, and specified laser classifications based on American National Standards Institute (ANSI) Z136.3 Standard along with relevant Federal Center for Devices and Radiological Health (CDRH), Occupational Safety and Health Administration (OSHA) as well as relevant State of Michigan requirements.

BMET 204 Biomedical Instrumentation Terminology and Safety 2 (2-2) 4 Cr. Hrs.

Prerequisites: Acceptance into the Biomedical Engineering Technology Program (BMET) and BMET 116 with a grade of 3.0 or better.

This course is intended to provide students with knowledge of medical equipment in the hospital setting, equipment management, equipment maintenance and other fundamental principals related to Biomedical Engineering Technology.

BMET 254 Biomedical Equipment Internship 1 (0-24/40) 3 Cr. Hrs.

Prerequisites: Acceptance into the Biomedical Engineering Technology Program (BMET) and BMET 116 with a grade of 3.0 or better.

This is the first cooperative assignment for a Biomedical Engineering Technology student who has completed the prerequisites for this course. Employment will be approximately 24 to 40 hours per week off campus in a technical capacity with a hospital or an employer in the biomedical field. The college and the employer will jointly evaluate the student, which will then serve as a basis for a final grade. A student on a BMET internship is considered a full time student with Schoolcraft College with all rights and privileges of a full time student. (Usually 15 weeks)

BMET 255 Biomedical Equipment Internship 2 (0-24/40) 3 Cr. Hrs.

Prerequisites: Acceptance into the Biomedical Engineering Technology Program (BMET) and BMET 116 , BMET 204 and BMET 254

with a grade of 3.0 or better.

This is the second cooperative assignment for a Biomedical Engineering Technology student who has completed one semester of internship. The conditions for assignment and evaluation are the same as for Biomedical Internship 1. The student is expected to handle an increased level of technical responsibility, and may possibly serve the internship at a hospital, medical equipment manufacturer or a medical equipment service company. The college and the employer will jointly evaluate the student, which will then serve as a basis for a final grade. (Usually 15 weeks)

BUS 101 Introduction to Business (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 (or may be taken concurrently) or minimum placement test scores of 18 ACT, 25 SAT or 71 CPT (Sentence Skills).

This course introduces principles, problems and practices of business in areas of organization, management, information related management and e-business, labor, production, human relations, marketing, finance, insurance, regulation and government.

BUS 103 Organizing a Small Business (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 (or may be taken concurrently) or minimum placement test scores of 18 ACT, 25 SAT or 71 CPT (Sentence Skills).
Recommended: BUS 122.

This course is designed to explore the advantages and disadvantages of entrepreneurship for those who may be considering starting, operating or seeking employment in a small business. The course will emphasize the organization of the small business including the various forms of business ownership, business planning, starting the business, location, cash flow and marketing concepts.

BUS 104 Operating a Small Business (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.
Recommended: BUS 103 (or may be taken concurrently).

This course is designed to explore the many considerations involved in owning and operating a small business. The course will emphasize the operation of a small business including insurance, employee relations, inventory control, purchasing, e-commerce, succession planning, financing, international business, legal and ethical issues.

BUS 120 Strategic Selling (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

Both the novice and the professional salesperson can benefit from this course. The personal selling process will be studied in detail, emphasizing topics ranging from prospecting and qualifying to closing the sale and after sale follow-up. Territory management, selling to organizational buyers and the techniques of ethical salesmanship will also be explored. Students will gain valuable experience with the selling process through case studies, role playing exercises and by creating a sales presentation for demonstration.

BUS 122 Advertising (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 (or may be taken concurrently) or minimum placement test scores of 18 ACT, 25 SAT or 71 CPT (Sentence Skills).

This course focuses on the information and skills required to create effective advertising. The student will learn to recognize effective advertising and gain an appreciation for the challenges advertisers face in trying to reach target audiences. The course also concentrates on market research, media strategy, integrated marketing communication and the impact of advertising on consumer behavior.

BUS 123 Consumer Behavior (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course explores the background of consumer behavior from the viewpoint of the individual, households, society and culture. Insights to individual behavior like personality, motivation and perception are covered. An exploration of social-cultural influences like economics, ethics and multiculturalism will provide an understanding of local, regional, national and global approaches to understanding consumers. In addition to consumer purchasing decisions, creating promotional strategies for customer retention and

consumerism and public policy issues will be discussed.

BUS 202 Business Ethics (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101. ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

This course provides an overview of business ethics including its importance and its impact on stakeholders and society. The course will explore emerging ethical issues, the institutionalization of business ethics, the decision-making process and implementing business ethics in a global economy.

BUS 204 Personal Finance (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

This course is a practical study of problems and solutions facing the consumer in today's society. The major areas that are covered in this course include personal budgeting, bank and financial institution comparison, strategies in the use and application of credit, insurance alternatives, housing alternatives, large item purchasing (such as automobiles) and occupational choices.

BUS 207 Business Law 1 (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

In this course you will learn how a business is impacted by the legal environment. You will be introduced to the key principles of business law including contracts, sales transactions, legal processes of crimes and torts, consumer rights and real-world cases showing these principles in action.

BUS 208 Business Law 2 (3-0) 3 Cr. Hrs.

Prerequisites: BUS 207. ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

This course is a continuation of BUS 207 with emphasis on negotiable instruments, real and personal property, agency, partnerships, corporations, employment, and wills and estates.

BUS 215 Business on the Web (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101. ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

This course introduces the student to the key business and technology elements of electronic commerce. Both the theory and practice of conducting business over the Internet and World Wide Web are presented. The major topics include technology infrastructure, planning and implementing a Web presence, marketing on the Web, business-to-business strategies, social networking, mobile commerce, online auctions, ethical and regulatory issues, Web server hardware/software, security and payment systems.

BUS 217 Business Management (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101 or consent of department. ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

This course provides an overview of the skills and processes used in business management. The major focus will be on the management process which includes the following functions: planning and decision making, organizing, leading and controlling. We will explore topics including historical management perspectives, business structures and environments and organizational communication. We will also discuss the various levels at which managers operate and examine the skills necessary to accomplish the related tasks.

BUS 220 Supervision (3-0) 3 Cr. Hrs.

Prerequisites: None.

In this course you will discover how to become a successful and respected supervisor in the current contemporary workplace. Besides assessing your current supervisory traits, you will develop new skills addressing leadership, staff motivation, effective communication methods, problem-solving techniques, time management, multitasking and human relations. You will explore real-world situations and learn strategies to overcome a variety of challenges facing supervisors in a global and diverse workplace.

BUS 226 Principles of Marketing (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101 or consent of department. ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

In this course you will learn an integrated analytical approach to the marketing process and essential economic principles as they apply to the marketing process. You will also be introduced to the relationships of marketing decisions, marketing research,

consumer behavior, product strategy, channels of distribution, promotion and pricing.

BUS 230 Human Resource Management (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101 or consent of department. ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

In this course, you will be introduced to the dynamic role of human resource management in supporting an organization's mission and objectives. You will explore the legal influences on selecting, managing and retaining human resources. You will prepare valid selection instruments to conduct effective interviews and performance reviews. We will discuss contemporary employment issues and global human resource concerns. You will become knowledgeable about the various systems and practices to help build a skilled and motivated workforce.

BUS 240 International Business (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101. ENG 101 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

This course focuses on the latest theories and concepts in international business while emphasizing the leading role culture plays in global commerce. The issues and challenges confronting international companies are explored along with the various strategies companies may pursue.

BUS 291 Business Internship (1-12/40) 3 Cr. Hrs.

Prerequisites: BUS 101 with a minimum grade of 3.0 and two additional Schoolcraft Business courses, consent of Department and an overall GPA of 2.5.

This is an applied course within Occupational Programs specializing in the field of business and is a cooperative assignment for students who have completed the prerequisites for this course. Employment will be approximately 12 to 40 hours per week off-campus at the employer's location. The final grade will be based on a joint evaluation by the college and the employer. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement. Department permission is required before registering for this course. The selection of eligible students to register for the course is a competitive process that includes attending a resume workshop at the Career Center, submission of a resume with a cover letter and interviews.

BUS 303 Entrepreneurship 1 (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101 and ACCT 201 or ACCT 103.

This course is designed to prepare students to start a small business. Students will explore various forms of business ownership and approaches to starting a business. Students will develop a business plan including marketing strategies, financial projections and operating plans.

BUS 304 Entrepreneurship 2 (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101.

This course is designed to prepare students to own and operate a small business. Students will explore and apply aspects of small business ownership including e-commerce, business ethics, business law, sources of financing, international business, inventory control, risk management and human resources.

BUS 426 Marketing Strategies (3-0) 3 Cr. Hrs.

Prerequisites: BUS 101 or consent of department and BUS 103 or BUS 303.

In this course, rather than analyzing another company's marketing plan, you will develop your own original marketing plan for an approved company. Students will conduct marketing research, develop marketing objectives, identify target markets and segments, analyze the product mix and lines strategies, evaluate service quality, develop pricing strategies, create appropriate traditional and non-traditional promotional methods and research potential suppliers.

CAB 100 Student Success Seminar (1-0) 1 Cr. Hrs.

Prerequisites: None.

This course is designed to introduce you to strategies and attitudes that will help you to maximize your potential for success in both college and the workplace. You will explore your personal learning style and develop skills aimed at improving your classroom

performance and future employability. Topics covered include college terminology and resources, technology, time management, goal setting, critical thinking and study techniques.

CAB 101 Student Success (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is designed to increase students' learning potential and success in college and beyond. Each student will actively explore learning strategies and attitudes that lead to improved grades and employability. Topics covered in the course include college language and resources, time/task planning, critical thinking, study techniques, uses of the e-portfolio, self-reflection, and exploring attitudes and dispositions successful students bring to a learning environment. Each student will learn to apply the principles covered in this course to other college course work.

CAD 101 Introduction to Computer Aided Drafting (2-2) 3 Cr. Hrs.

Prerequisites: Drafting experience and consent of department.

This course is designed for the experienced drafter who wants to obtain some CAD skills. Topics to be covered will include 2D drawing creation, drawing, editing, and plotting as well as view manipulation. In addition, the student will learn the basics about file saving, retrieving and copying.

CAD 103 Engineering Graphics (2-2) 3 Cr. Hrs.

Prerequisites: None.

This course is designed to introduce the student to the basic concepts and standard practices necessary for the graphical communication of technical data which includes the reading, interpretation and creation of engineering drawings, technical sketching and introduction to computer-aided drafting (CAD). Topics introduced include orthographic projection, pictorials, sectioning, auxiliary views, dimensioning, tolerancing, surface finish and fasteners. This course is designed for the transfer Engineering student and as an introductory course for those who are considering a career as a mechanical or tool designer.

CAD 106 Advanced Drawing Views and Descriptive Geometry (3-2) 4 Cr. Hrs.

Prerequisites: CAD 103 or equivalent.

This course is designed to teach the student advanced skills in drawing view creation. Sketching and computer aided drafting (CAD) will be the tools for communicating mechanical product information. Topics to be covered will include projection methods for creating orthographic, auxiliary and section views. Descriptive Geometry will be used to solve advanced drawing problems. This course is designed for those who have chosen a career as a mechanical or tool designer.

CAD 107 Detailing (2-4) 4 Cr. Hrs.

Prerequisites: CAD 106 or equivalent.

This course is designed to teach the student the concepts and standard practices involved in the creation of detail and assembly drawings. Geometric Dimensioning and Tolerancing (G.D. and T.) philosophy will be employed for controlling variations. Sketching and computer-aided drafting (CAD) will be the tools for communicating mechanical product and tool information. The student will create 3D models and 2D drawings. Simple assemblies will be constructed and analyzed using previously created parts. Topics to be covered will be dimensioning standards and practices, tolerancing methods, tolerance stack-up evaluation, G.D. and T. methods, 3D modeling, and 2D and data extraction from 3D models.

CAD 211 CATIA - Level 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This first level CATIA course will cover the basics of creating, editing and storing 3D models. The construction and constraining of assemblies will be covered as will the creation of detail and assembly drawings using the drafting package.

CAD 212 CATIA - Surfacing (2-2) 4 Cr. Hrs.

Prerequisites: CAD 211 or equivalent.

This course is designed to present higher level part modeling commands for CATIA Modeler. Particular attention will be paid to surfacing.

CAD 221 SolidWorks - Level 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This first level SolidWorks course will cover the basics of creating, editing and storing 3D models. The construction and constraining of assemblies will be covered as will the creation of detail and assembly drawings using the drafting package.

CAD 290 Computer-Aided Design Internship (1-12/40) 3 Cr. Hrs.

Prerequisites: ENGR 100 , CAD 103 and a 3D modeling course -- CAD 211 or CAD 221 -- with a minimum GPA of 3.0 and an overall minimum GPA of 2.5 or consent of department.

This is an applied course within Occupational Programs specializing in the field of Computer-Aided Design (CAD) and is a cooperative assignment for students who have completed the prerequisites for this course. Employment will be approximately 12 to 40 hours per week off-campus at the employer's location within a design or related department. The final grade will be based on a joint evaluation by the college and the employer. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement. Department permission is required before registering for this course. The selection of eligible students to register for the course is a competitive process that includes testing, submission of a resume with a cover letter and interviews.

CBPA 103 Introduction to Baking and Pastry Skills and Techniques (2-0) 2 Cr. Hrs.

Prerequisites: None.

This course will provide a broad orientation to aspiring bakers and pastry chefs in order to offer a better understanding of the specialized fields of baking and pastry. Discussions will include professionalism, safety and sanitation, equipment identification, function and maintenance. The fundamental baking processes, handling and function of ingredients will also be covered.

CBPA 125 Pastries (5-15) 20 Cr. Hrs.

Prerequisites: CBPA 103. CUL 102 or current ServSafe certification.

Upon successful completion of this course, students will have acquired professional skills in the art of pastry including recipe expansion and costing, use of hand tools and equipment, safety, sanitation and organization skills. Products introduced to the aspiring students include pies and tarts; French pastry; individual pastries; classical and contemporary tortes; warm, cold and frozen desserts; contemporary plated desserts; miniature pastries; chocolates; cake decoration; and decorative centerpieces.

CBPA 144 Baking (3.75-11.25) 15 Cr. Hrs.

Prerequisites: CBPA 103. CUL 102 or current ServSafe certification.

Upon successful completion of this course, students will have acquired professional skills in the art of baking. This course will cover basic elements including costing out recipes, expanding and reducing recipe sizes, proper usage of bakery equipment, using straight dough methods to produce French baguettes, soft and hard rolls, pan breads and many hearth breads, as well as production of various cookies, quick breads, muffins and biscuits. Advanced techniques will be taught including fermentation processes and how they contribute to flavor, mixing methods, the functionality of ingredients, and the study of various flours, as well as chemical reactions that take place while baking. The production of artisan breads, laminated doughs, savory baked goods, specialty baked goods, breakfast pastries, high ratio cakes and decorative centerpieces will be important aspects of this course.

CGT 109 Design Concepts and Technology (3-0) 3 Cr. Hrs.

Prerequisites: None.

In order to succeed in any discipline within the Computer Graphics field students must have a strong sense of design. This course covers both the theoretical and the practical aspects of design theory, design process and software application. This course includes an introduction to design elements and principles - how they work together to create effective communication. It includes an understanding of typography, grid systems and color theory including physiological, emotional and cultural variations. Materials include a look at human perception and Gestalt theory to foster an understanding for visual communication. A variety of application programs are introduced in order to explore proper file types and tools and the strengths and limitations of a variety of digital media. The computer graphics industry is explored and resources are provided for concept development and job search along with a brief introduction to intellectual property rights. This course provides foundation skills for all classes within the CGT curriculum. In this course students will use software at an introductory level, exploring vector and bitmapped images, page-layout, animation and

interactive Web site development. Projects and exercises are designed to allow students to do both short skill building exercises and more complex larger works.

CGT 123 Illustration - Illustrator (3-0) 3 Cr. Hrs.

Prerequisites: CGT 109 (may be taken concurrently).

This course is intended to introduce students to the field of graphic design and illustration using professional computer drawing software. Emphasis is on learning the software and on applying basic design skills to the computer generated image. Students are instructed in the fundamentals of drawing on the computer, working with color, working with type and combining type and image for effective communication. Students are expected to be familiar with basic functions of the computer before beginning the class.

CGT 125 Digital Imaging 1 - Photoshop (3-0) 3 Cr. Hrs.

Prerequisites: CGT 109 (may be taken concurrently).

This course introduces students to the field of digital imaging and electronic photographic manipulation using Adobe Photoshop. Emphasis is placed on developing strong software and digital imaging skills plus reinforcement of design and creative skills. This will be accomplished through a series of progressively challenging assignments, which mirror professional studio projects. The class will progress the student's skills from basic application knowledge to advanced image manipulation techniques. The assignments will be applicable for both print and screen based imagery. Students are expected to have some computer experience and be familiar with basic functions of the computer before beginning the class.

CGT 127 Publishing - InDesign (3-0) 3 Cr. Hrs.

Prerequisites: Computer experience highly recommended.

This course introduces students to the field of publishing design using Adobe InDesign. Emphasis is on learning the software and on applying basic design skills to computer generated design. Students will have the opportunity to learn the fundamentals of page-layout, typography, working with color and color separations and preparing documents for printing. Students are expected to have some computer experience and be familiar with basic functions of the computer before beginning the class.

CGT 136 Web Design and Development 1 (3-0) 3 Cr. Hrs.

Prerequisites: Computer experience highly recommended.

This course introduces the student to the unique design principles and World Wide Web Consortium (W3C) standards for creating effective Web sites. Web design process will be introduced to aid in the basic planning, wireframing, and construction of a project. Web graphic understanding will be integrated with its technical build. Students will design and code basic Web sites utilizing HTML and Cascading Style Sheets (CSS); with emphasis on access and semantic markup. Basic Web authoring tools and image editing software will be used.

CGT 141 Introduction to 2D Animation and Interactive Media (3-0) 3 Cr. Hrs.

Prerequisites: CGT 123 (may be taken concurrently).

This course is an introduction to the creation of interactive media. Students will learn how to make basic 2D animations and use basic scripting techniques to make interactive projects for CD-ROM and kiosk based projects. Emphasis will be on solving the special design and production problems encountered when creating non-linear projects, along with animation techniques, basic scripting, memory management, importing/exporting considerations, basic sound and video, project management and production planning.

CGT 149 Typography (3-0) 3 Cr. Hrs.

Prerequisites: CGT 123 (may be taken concurrently).

This course introduces the graphic design student to the principles of typography by investigating letter forms as both an element of design and as a medium of communication. Concentration is on typeface identification, effective use of type to convey information, measuring systems and application of typography to computer graphics.

CGT 158 Sound Design (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides an introduction to the basic concepts of sound production for computer and video based delivery systems. Also emphasized are the necessary hardware/software, sound recording and editing, file management and transfer concepts. Attention is also given to aesthetic considerations such as sound design in foreign films and video games.

CGT 161 History of Graphic Design (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course introduces the student to the history of graphic design and its application as a form of mass communication. Students examine how social, cultural and technical considerations have influenced the way information is designed for publication. Students learn how an understanding of historical, cultural and social influences leads to more effective graphic design in the modern world.

CGT 163 Web Design and Development 2 (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following course: CGT 136.

This course emphasizes the integration of design principles and software skills to create effective Web sites using advanced web design process. Students will explore design and development features; such as, User Interface and User Experience Design, HTML (5+), Cascading Style Sheets (3+) (CSS), tables (for tabular data display), forms, and embedding various media types; such as, Flash and video. Students will construct valuable solutions to the needs and goals of the client with attentive focus on project descriptions, design compositions, site maps, wireframes, usability testing, project management, and optimization. Students will study how the Web works, its design and development challenges, current industry standards specified by World Wide Web Consortium (W3C), and the transferring of local files to a remote live Web server. Adobe Dreamweaver and other current Web software will be used.

CGT 166 Photography (3-0) 3 Cr. Hrs.

Prerequisites: Computer experience highly recommended.

This course is designed to instruct the student on photographic principles that affect exposure, image structure, composition, printing and the interface with digital media. Students will experience hands-on photography sessions that demonstrate lighting, visual effects and composition development based on contrast and focal point awareness. In conjunction with the camera, the student will explore advanced digital imaging options, the zone system and creative merging techniques. Course materials are designed for the student pursuing a graphic design career. The student will be required to have a 35mm camera and is responsible for film and processing costs or digital equivalent.

CGT 168 Storyboarding (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following course: CGT 125.

This course provides the student a working knowledge of storyboarding. It integrates creative expressions, emotional impressions and production processes into a cohesive conclusion. It provides the student an opportunity to expand a creative understanding of audio, cinematography, lighting and staging. Storyboarding is a basic need for the student pursuing careers in multimedia, interactive and performance arts.

CGT 208 Digital Video Production (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following courses: CGT 123 , CGT 125 and CGT 168.

This course is an overview of skills required to create digital video productions. Students will develop video productions using pre-production planning, practical skills in camera usage, efficiencies in directing and production skills and refined non-linear editing. The productions developed during the semester will include informational, marketing and promotional materials.

CGT 210 Visual Effects Production (1-2) 3 Cr. Hrs.

Prerequisites: CGT 208 (may be taken concurrently).

This course is designed to integrate video production techniques, 3D model building and computer graphics compositing. Students will develop the practical skills to coordinate the merger of these techniques into a consistent visual effects production. This course will enable the students to effectively calculate shooting angles, monitor film speeds, develop mattes and scale 3D models or miniatures into a final scene. Safe Practical Effects will be developed that can be used on a set to accomplish dramatic effects while maintaining visual continuity of composited digital images.

CGT 212 Advanced Interactive Media (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in CGT 141 or equivalent experience with scripting for interactive media.

This course provides an in-depth exposure to scripting used in interactive media. Students will learn to write scripts which extend and enhance non-linear, computer-based projects. During the semester, each student will design and produce a complex, highly interactive project such as a Web site, computer game or computer-based training module. Students should have a working

knowledge of scripting techniques before beginning this class.

CGT 213 Advanced 2D Animation (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in CGT 141 or equivalent experience with 2D animation software.

This course provides an in-depth exposure to 2D animation. Students will learn and extend their skills in a variety of 2D animation and visual communication techniques. Students will learn to manage a large scale 2D animation project by creating a project for computer-based training, marketing or entertainment. Students should have a working knowledge of keyframe/tweening techniques before beginning this course.

CGT 215 Motion Graphics 1 - After Effects (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following courses: CGT 109 , CGT 123 , CGT 125 and CGT 168.

This course develops creative freedom and control for designing sophisticated motion graphics and visual effects for film, video, multimedia and the Web. Students will integrate previously learned applications into motion-graphics using Adobe After Effects and/or related applications. Students will develop an understanding of motion control and keying capabilities plus audio and visual effects.

CGT 226 Digital Imaging 2 - Photoshop (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following courses: CGT 109 , CGT 123 and CGT 125.

This course will further explore the uses of photography and the digital image in the field of graphic design. Students will learn how object oriented graphics and design can be enhanced with the dynamic range of Photoshop options. Students will develop advanced compositing skills, sensitivity to the selection of color modes plus channel and masking options, restoration and repair processes and an understanding of usable effects.

CGT 231 Electronic Publishing (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following courses: CGT 109 , CGT 123 , CGT 125 and CGT 127. CGT 226 may be taken concurrently.

This course emphasizes the integration of design and software skills to create more effective layouts for print media. Students will explore photography and digital imaging, illustration, graphic design and page layout. Students learn to use type effectively, create and integrate images and type, set up projects for printing and apply design principles to create effective and readable documents. Instruction in advanced software techniques and in the use of a variety of peripherals is featured. Emphasis will be on the application of software and design skills to a variety of realistic graphic design projects.

CGT 234 Web Design and Development 3 (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following course: CGT 163.

This course emphasizes the integration of front-end design and development principles and software skills to architect effective user-friendly Web sites. Students will focus on advanced design and development features; such as, JavaScript, DOM (Document Object Model) Scripting, and the utilization of industry standard JavaScript frameworks. Students will apply software and development skills to realistic Web development projects. Students will explore common browsers compatibilities, developing Web sites and publishing local files to a remote live Web server. Adobe Dreamweaver or other current Web authoring and editor software will be used. The student will look at user experience considerations; such as, user interface architecture, usability, 508 compliance, and the standards specified by the World Wide Web Consortium (W3C) to produce an engaging end user Web experience.

CGT 244 History of Animation (3-0) 3 Cr. Hrs.

Prerequisites: None.

This class will give students a context for understanding the rich and unique history of animation and graphic design. In addition to learning important milestones in these fields, students will develop their eye and their aesthetic appreciation of this kind of art. Students will be exposed to the historical contingencies that lead to different developments as well as to animations and graphic design from all over the world. This course will also stimulate students in their own creative endeavors in their chosen field.

CGT 246 Motion Graphics 2 - After Effects (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following course: CGT 215.

This course will further explore the uses of audio, graphics and video in the field of motion graphics. Students will learn how object motion graphics programs can interrelate to develop informational and promotional media. Students will make extensive use of two- and three-dimensional, motion and still graphics to design and create projects for video and/or multimedia applications.

CGT 247 3D Animation - Introduction (3-0) 3 Cr. Hrs.

Prerequisites: CGT 123 and CGT 125 (may be taken concurrently).

This course is designed to increase the student's familiarity with the 3D interface, concepts of 3D space and animation. It will provide an introduction to primitives, some modifiers and box-modeling techniques. Students will be exposed to lighting, texture mapping concepts, and basic animation techniques. Students will also develop skill sets to create simple animations.

CGT 250 Practical Application (3-0) 3 Cr. Hrs.

Prerequisites: Must take one of the following courses either before or with this course: CGT 231 , CGT 234 , CGT 246 , CGT 252 or ART 205.

Students will work in teams to develop and execute graphic design media for professional organizations, internal promotions and information media. They will function within work groups based on production skills. The groups are defined by track structures - Print Graphics, Web Design, Motion Graphics and Interactive Media. Emphasis is on applying skills to real world projects and on developing a professional portfolio. Students are instructed in team building, project management, research and interviewing techniques.

CGT 252 3D Animation - Animating (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following course: CGT 254.

This class adds to the skill sets that students were exposed to in CGT 247 Introduction to 3D Animation and CGT 254 Advanced Models and Textures. In this class students will improve their understanding of the aesthetics and software technology involved in creating effective and convincing animation.

CGT 254 3D Animation - Advanced Models and Textures (3-0) 3 Cr. Hrs.

Prerequisites: A grade of 2.0 or higher in the following course: CGT 247.

This class follows up on the skill sets that students were exposed to in CGT 247 Introduction to 3D Animation. In this class students will learn modeling, texturing and lighting techniques at a more sophisticated level. These techniques will include polygon, patch, NURBS and subdivision surface modeling, creating custom textures, lighting and atmospheric effects. They will also learn the techniques of intelligent model building and issues in creating projects for a variety of delivery platforms.

CGT 256 Portfolio 3D - Reel Development (3-0) 3 Cr. Hrs.

Prerequisites: CGT 246 (may be taken concurrently).

This class prepares the student for finding a job in the field of 3D Animation or Video Production. In this course, students will assemble their previous work into a professional presentation. In doing so, the student's strengths and weaknesses will be discovered and discussed. At least one project will be assigned to specifically address the individual student's portfolio needs. During the course students will create a traditional resume.

CGT 257 Portfolio Preparation (3-0) 3 Cr. Hrs.

Prerequisites: Must take one of the following courses either before or with this course: CGT 231 , CGT 234 or CGT 246.

This class prepares the student for finding a job in the field of graphic design. In this course, students will assemble their previous work into a professional portfolio/presentation. This is both a print-based and an electronic portfolio. Students will also create an identity logo, implementing it on their business card, resume and portfolio packaging. Students will explore job resources, interviewing skills and professional resources such as contracts and pricing guides.

CGT 270 Internship (0-3) 3 Cr. Hrs.

Prerequisites: Consent of department.

This internship is designed for the exceptional Computer Graphic Technology student. This course consists of work as an intern Graphic Designer, Media Developer or similar position with an approved business or company. CGT Internships will be administrated

by a faculty member and approved by the CGT Department. The instructor and the business partner will jointly evaluate the student. An additional project will be developed for the client outside the normal working hours. This project will be managed by the CGT faculty member.

CGT 298 Honors Studies (3-0) 3 Cr. Hrs.

Prerequisites: Completed (12) twelve hours of course work. Deanâ€™s List status (GPA 3.5) and consent of instructor.

An opportunity for the talented student to explore individually, in depth, under the guidance of a faculty member, a topic, issue or problem related to the field of Computer Graphics Technology. Available to Dean's List level students or equivalent and with the consent of the instructor. This course will not be listed in the schedule of classes. To enroll in this course, a candidate must submit a project plan to an instructor. The instructor will review the plan with the candidate and may recommend changes. When the project is approved, a course section will be created and the student will be given permission to enroll.

CHEM 51 Basic Chemistry (4-2) 4 Cr. Hrs.

Prerequisites: MATH 53 or equivalent.

This is an elementary course in chemistry for students who have not had high school chemistry or who wish to review basic chemical concepts. This course provides an introduction to chemical measurement, basic definitions and laws, chemical nomenclature and equations, calculations based on chemical equations, atomic theory, the Periodic Table, solutions, acids, bases, gases and organic chemistry.

CHEM 100 Introduction to the Chemistry of Food for Culinary Arts (3-2) 4 Cr. Hrs.

Prerequisites: None.
Corequisites: Students must be enrolled in 100 level or above core culinary classes.

This course is designed to familiarize the culinary arts student with a basic understanding of scientific principles as they apply to foods and culinary processes. The course will include a basic introduction to various aspects of chemistry. Classes of foodstuffs will be examined on a molecular level to ascertain an understanding of the interactions that occur in culinary applications. The laboratory portion of the course will emphasize the relationships between chemical principles/techniques and food preparation.

CHEM 104 Fundamentals of Chemistry (4-3) 4 Cr. Hrs.

Prerequisites: MATH 53.

This course is a conceptual based, 'real life' application, chemistry lab science course. The course provides an introduction to basic chemical principles including classifications of matter and characteristic properties, atomic and molecular theories, chemical symbolism and nomenclature, periodic table analysis, bonding models, thermodynamics, acid/base concepts, solutions, oxidation/reduction and fundamental organic chemistry, as well as the application of general mathematical principles to chemical systems.

CHEM 111 General Chemistry 1 (4-3) 4 Cr. Hrs.

Prerequisites: CHEM 51 or CHEM 104 or equivalent with a grade of 2.0 or better. MATH 113 or equivalent. Math may be concurrent.

This course is designed as a first course in a traditional one-year program in general college chemistry and includes fundamental concepts such as chemical formulas, chemical equations, laws of chemical combination and physical, chemical and nuclear properties. Atomic and molecular structure, bonding, stoichiometry, periodicity, gases, solutions, acids, bases, oxidation-reduction and nuclear chemistry are also covered in this course. Laboratory work correlates with lecture and stresses the major concepts in this course.

CHEM 117 General Chemistry 2 and Qualitative Analysis (4-4) 5 Cr. Hrs.

Prerequisites: CHEM 111 with a grade of 2.0 or better or consent of department.

This course is the second course in a traditional one-year general college chemistry program and includes the study of kinetics, solution equilibria, solubility equilibria, hydrolysis, electrochemistry, coordination compounds, thermodynamics and qualitative analysis. A brief introduction to organic chemistry and quantitative analysis is also included. Laboratory work correlates with lecture and stresses the identification of common cations and anions by semi-micro methods.

CHEM 120 Organic and Biochemistry (3-3) 4 Cr. Hrs.

Prerequisites: CHEM 104 or CHEM 111.

This course is an introduction to both organic chemistry and biochemistry. Major topics covered include structures, functions and reactions of organic and biological compounds; the chemistry of metabolic processes; enzymatic processes; and related topics. The laboratory portion of the course includes exercises in organic and biochemistry designed to reinforce lecture topics.

CHEM 213 Organic Chemistry 1 (4-4) 5 Cr. Hrs.

Prerequisites: CHEM 117 with a grade of 2.0 or better or consent of department.

This is the first semester of the two-semester sequence of Organic Chemistry. Course content emphasizes bonding and structure of carbon compounds, as well as a mechanistic understanding of organic reactions. Other topics include standardized nomenclature, acid-base behavior of organic molecules, classification of compounds based on functional groups and their characteristic reactions and structure/properties relationships. The laboratory portion of the course covers a range of techniques fundamental to the practice of organic chemistry. Students are also introduced to the use of modern spectroscopy for structural determination.

CHEM 214 Organic Chemistry 2 (4-4) 5 Cr. Hrs.

Prerequisites: CHEM 213 with a grade of 2.0 or better or consent of department.

This is the second semester of the two-semester sequence of Organic Chemistry. Course content emphasizes characteristic reactions of aromatic compounds and a wide variety of more complex functional groups, including carbonyl compounds, carbonyl-derivatives and amines. Practical application of functional-group transformation reactions to organic synthesis is addressed, as is utilization of a number of spectroscopic methods for structural determination. The laboratory portion of the course continues development of practical skills in organic transformations using more complex reaction techniques with application to organic synthesis.

CHIN 101 Elementary Chinese 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is intended for students who have no previous education in Chinese. The course will cover basic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of Chinese culture will be an integral part of the course.

CHIN 102 Elementary Chinese 2 (4-0) 4 Cr. Hrs.

Prerequisites: CHIN 101 with a grade of 2.0 or better or one year of high school Chinese or consent of instructor.

This course is a continuation of CHIN 101 and continues to review the basic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of Chinese culture will be an integral part of the course.

CIS 105 Computer Orientation (1-0) 1 Cr. Hrs.

Prerequisites: None.

This course is designed for students who have had little or no experience with computers. Topics covered in this course include introduction to the Windows-based operating systems and some word processing concepts. Basic word processing concepts will be introduced using the hands-on approach. Successful completion of this course meets the minimum requirement needed to qualify a student to use one of the college's computers during open lab hours.

CIS 115 Introduction to Computer Based Systems (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: Computer and keyboarding experience.

In today's world of rapid technological advances, the prevalence of computers in the home and the office increases the demand for computer literacy and competency. The intent of this course is to help you become competent and comfortable in using computers to achieve professionalism in your chosen field of endeavor, as well as in your personal life using your digital devices. A variety of topics will be addressed, such as computer hardware and software, the internet and Web resources, networking and security, databases and information systems and mobile computing.

CIS 120 Software Applications (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: Computer and keyboarding experience.

This course is designed to provide hands-on experience with a current office software package for the computer. Emphasis is in the area of word processing, spreadsheets, database management and a presentation software program.

CIS 122 Microsoft Outlook (2-0) 2 Cr. Hrs.

Prerequisites: CIS 120.

This course is designed to provide practical, hands-on experience with Microsoft Outlook. Microsoft Outlook is a flexible messaging and personal information management program used to send and receive email, as well as to manage messages, appointments, contacts and tasks.

CIS 125 Principles of Information Security (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course examines the field of information security to prepare individuals for their future roles as business decision makers. This course provides the foundation for understanding the key issues associated with protecting information assets, determining the levels of protection and response to security incidents, and designing a consistent, reasonable information security system with appropriate intrusion detection and reporting features. In addition, the course also covers both the managerial and the technical aspects of this exciting discipline and addresses knowledge areas of CISSP (Certified Information Systems Security Professional) certification.

CIS 129 Introduction to Programming Logic (3-0) 3 Cr. Hrs.

Prerequisites: None.

This is an introductory programming course where students will learn the fundamentals of program logic and design. Heavy emphasis is placed on program design techniques. Students will develop programs using top-down design, structured programming and modular development methods.

CIS 170 Microsoft Windows (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: Computer experience.

This course is designed to explore the features of the latest Windows desktop operating system which includes modules such as digital media, electronic messaging, networking, remote assistance, etc. In addition to studying the features that are included in Windows, the class will also emphasize customizing Windows to meet the user's needs. The students will learn to work with the desktop environment, documents and folders, toolbars and taskbar, control panel, file and Web searching tools, help files and computer maintenance and performance optimization tools. It is recommended that students have experience using computers and have proficiency in keyboard and mouse usage.

CIS 171 Introduction to Networking (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: Computer experience.

This course introduces students to the key concepts of data communications, telecommunications and networking. The course provides a solid introduction to networking fundamentals including key acronyms, protocols and components that are essential to understanding how networks operate today. Upon completion, the student will have a solid understanding of how information travels from a source computer to a destination computer across a complex network.

CIS 172 Network Security Fundamentals (3-0) 3 Cr. Hrs.

Prerequisites: CIS 171.

This course is designed to provide students a fundamental understanding of network security principles and implementation. A variety of activities will reinforce the technologies used and principles involved in creating a secure computer network environment.

CIS 173 Wireless Local Area Networks (3-0) 3 Cr. Hrs.

Prerequisites: CIS 171.

This course is designed to provide students a fundamental understanding of wireless data communication standards and technologies. It will also provide an overview of various opportunities and markets in the industry. Security aspects of each wireless technology are also explored.

CIS 176 Visual Basic.NET (3-0) 3 Cr. Hrs.

Prerequisites: CIS 129.
Recommended: Windows experience.

This course is designed to provide students with the knowledge and skills needed to develop applications in Microsoft Visual Basic.NET for the Microsoft.NET platform. The course focuses on user interfaces, program structure, language syntax and implementation details. It is recommended that students have experience using Microsoft Windows before taking this course.

CIS 178 Technical Microsoft Windows (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: Computer experience.

This course is designed to serve the needs of students and information systems professionals who are interested in learning more about the features of the Windows Professional operating system, as well as individuals who are interested in obtaining Microsoft certification on this topic. This course includes real world examples, interactive activities and hands-on projects that reinforce key concepts in preparing for Microsoft certification. It is recommended that students have experience using computers and have proficiency in keyboard and mouse usage.

CIS 180 Spreadsheet Applications - Current Software (3-0) 3 Cr. Hrs.

Prerequisites: CIS 120.

This course addresses the use of spreadsheet applications as a means to solve problems. Students will analyze comprehensive problems and design a worksheet solution that conforms to established criteria and goals. Emphasis is placed on thinking through problems and using a comprehensive host of tools and features in a popular spreadsheet software package to develop logical solutions.

CIS 185 Introduction to HTML (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides advanced instruction in the most important topics of HTML. The course begins with the basics of creating Web pages with graphics and links, using tables and controlling page layout with frames. Advanced topics covered include cascading style sheets, an introduction to programming with JavaScript and working with JavaScript objects and events. The student is instructed in elements of Web page design. Each student will produce a large-scale multimedia Web page as a semester project.

CIS 211 Introduction to C++ (2-0) 2 Cr. Hrs.

Prerequisites: CIS 129.

This course is an introduction to the C++ programming language. The student will learn the basics of the C++ language up through and including control structures, functions and pointers. This course is intended for those who want a general knowledge of the C++ language.

CIS 215 Advanced Software Applications (3-0) 3 Cr. Hrs.

Prerequisites: CIS 120 or consent of department.

This course is designed for students who have a working knowledge of the computer and word processing, spreadsheet and database packages. Advanced features of the software are developed building on a foundation of a beginning software applications course.

CIS 221 Advanced C++ (2-0) 2 Cr. Hrs.

Prerequisites: CIS 211.

This course is a continuation of the Introduction to C++ programming language course. The student will learn the advanced concepts of the C++ language up through and including operator and function overloading, inheritance, virtual functions, polymorphism,

stream I/O, templates, exception handling, file processing and data structures. This course is intended for those who desire an advanced knowledge of the C++ language.

CIS 223 Introduction to C# (3-0) 3 Cr. Hrs.

Prerequisites: CIS 129.

This course is an introduction to the C# programming language. The student will learn the basics of the C# language up through Windows programming and including creating Web server form controls. This course is intended for those who want a general knowledge of the C# language, part of the Microsoft VisualStudio.NET.

CIS 225 Database Management Systems (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course covers a popular relational database, Microsoft Access, in depth. Emphasis is on creating, editing, sorting, linking and querying databases. Forms, switchboards and custom reports will be created. Advanced topics include designing and creating a complete application system, as well as programming in SQL. Emphasis will also be on understanding the concepts behind database management system design to prepare students to be both users and developers.

CIS 235 Managing and Troubleshooting PCs (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: Windows experience.

Personal computer servicing and support will be covered within the following topics: physical and electrical concepts of motherboards, power supplies, BIOS and expansion buses; definitions and uses of microprocessors (CPUs), memory system resources and input/output devices; data storage devices and interfaces; cables, connectors and ports; basic networking fundamentals; operating system fundamentals; and DOS.

CIS 238 JavaScript (3-0) 3 Cr. Hrs.

Prerequisites: CIS 185 or CGT 136 or a basic knowledge of HTML.

JavaScript is a powerful, object-based scripting language that can be embedded directly into HTML pages. JavaScript allows you to create dynamic, interactive Web-based applications that run completely within a Web browser. This course covers JavaScript as a client-side scripting language.

CIS 250 Systems Development and Design (4-0) 4 Cr. Hrs.

Prerequisites: Completed (24) twenty-four credit hours of CIS courses or consent of department.

The student will be made aware of various tools available to the systems analyst in solving business problems. Basic tools are used by the student in the design of a system for a practical business application. Emphasis is placed on the communication between the systems analyst and the other levels of management. "Selling" of new systems and methods is stressed. Detailed steps of each phase of systems design are shown in their relationship to the overall study.

CIS 251 IT Project Management (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: Basic knowledge and/or experience in the field of IT.

This course presents the fundamental principles, practices and tools necessary to effectively manage Information Technology projects. Nine project management knowledge areas will be applied including integration, scope, time, cost, quality, human resources, communications, risk and procurement. The five process groups - initiating, planning, executing, controlling and closing - will be employed in IT projects. Examples of various Microsoft projects will be utilized to help reinforce some of the concepts.

CIS 255 Introduction to LINUX (3-0) 3 Cr. Hrs.

Prerequisites: CIS 170.

This course is designed for students pursuing careers in computer information systems or who are currently in the industry. This is an introductory course that provides an overview of the LINUX operating system. A hands-on approach to common LINUX applications is used. Topics discussed include the LINUX operating system, basic LINUX desktop and terminology, LINUX utilities and basic bash programs.

CIS 265 Networking 1 (3-0) 3 Cr. Hrs.

Prerequisites: CIS 235.

This course is designed to introduce the student to basic computer networking protocols, standards and systems applicable to Local Area Networks (LAN) and Wide Area Networks (WAN).

CIS 267 Home Technology Integration (4-0) 4 Cr. Hrs.

Prerequisites: Computer experience recommended.

This course is designed to introduce the student to networking technologies, audio visual systems, automation methods and telecommunication techniques that converge in integrated home technology. The student will practice installing and maintaining a home networking system.

CIS 271 Local Area Networks (3-0) 3 Cr. Hrs.

Prerequisites: CIS 171.

This course begins with the basics of Local Area Networks (LAN) concepts, technologies, components and protocols inherent in today's local area networking environments. Students will see how computers are connected together to form peer-to-peer and server-based networks and discover the functionality and uses of a router, bridge, switch, hub and repeater. The two most commonly used network operating systems today, Microsoft's NT and Novell's NetWare, are also introduced in this course. VLANs and the various forms of Ethernet technology such as Fast Ethernet are also explained.

CIS 273 TCP/IP and Network Architectures (3-0) 3 Cr. Hrs.

Prerequisites: CIS 171.

This course introduces students to the key concepts of Transmission Control Protocol/Internet Protocol (TCP/IP). The world's largest network, the Internet, is also one of the world's most powerful communication tools. Students learn the underlying applications, components and protocols of TCP/IP and its necessary link to the Internet and how to identify TCP/IP layers, components and functions. Navigation tools, TCP/IP services and troubleshooting methodologies are also reviewed.

CIS 276 Networking 2 (3-0) 3 Cr. Hrs.

Prerequisites: CIS 265.

This course is designed to follow the introduction to networking (Networking 1) course. Students will learn LAN configurations and protocols. Installation, management and troubleshooting Microsoft Windows server on a local area network will be covered. Additional topics on hardware, clients, domains, user accounts and printers will be covered.

CIS 290 Object-Oriented Programming With Java (3-0) 3 Cr. Hrs.

Prerequisites: CIS 129.

This course provides an introduction to object-oriented programming using Java. Students will develop real world application programs and Web-based applets based on object-oriented programming concepts including encapsulation, inheritance and polymorphism.

CJ 102 Organization and Administration of Law Enforcement Agencies (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will provide the student with an overview and understanding of law enforcement management and supervision to include an historical perspective and appropriate applications. Students will be exposed to managerial processes with regard to communication, decision making and problem solving that enable managers to effectively train and motivate subordinates. This course will identify how law enforcement managers effectively handle discipline, complaints, grievances, conflict and stress. This course will further identify how managers deploy resources, improve productivity and utilize performance appraisals and evaluations. Students will analyze challenges in managing law enforcement agencies in a changing environment.

CJ 104 Introduction to Security (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course examines the systems and organization of security with primary emphasis on the private sector. You will learn about the

role of security, contemporary issues in security including legal authority, enhancing forms of physical security and security in multiple industries and institutional settings. Finally, we will evaluate the challenges and standards of the security profession and its expanding responsibilities.

CJ 107 Police Field Operations (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a practical study of purposes, methods, types and means of law enforcement patrol, accident prevention and effective traffic control interviewing techniques. Students will learn about crimes in progress, stress survival and use of force. Training will be received on proper methods of conducting preliminary investigations, unlawful assembly and riot control.

CJ 113 Introduction to Criminal Justice System (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course covers the overall system of criminal justice from crime detection to the release and revocation of prisoners. The student will examine the role of law enforcement officers, corrections officers, probation officers, defense attorneys, prosecutors and judges as they relate to the defendant. The student will analyze the components of the system (law enforcement, courts and corrections) with emphasis on their interrelationships and expectations.

CJ 201 Criminal Investigation (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a study of criminal investigation techniques of surveillance, collection, recording and preservation of evidence. Students will study the analysis of evidence and use of science laboratories. This course will be conducted in cooperation with other law enforcement agencies.

CJ 209 Basic Criminalistics (2-2) 3 Cr. Hrs.

Prerequisites: None.

This course acquaints students with proper techniques of criminalistics. Students will have an opportunity to perform investigations in simulated crime scene situations using scientific investigative techniques involving collection, presentation and interpretation of physical evidence.

CJ 211 Criminal Law and Procedure (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a study of the elements of criminal law, its purposes and function. The course will focus on the laws of arrest, search and seizure, rights and duties of officers and citizens. Students will study the elements necessary to establish crime and criminal intent, sources of criminal law, criminal responsibility and general court procedures.

CJ 212 Criminology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is designed to identify the theories of crime causation, behavioral systems in crime (organized white collar crime) and the nature and extent of crime. Emphasis will be given to law as social control, history and philosophy of punishment and contemporary correctional techniques.

CJ 221 Juvenile Justice (3-0) 3 Cr. Hrs.

Prerequisites: None.

The purpose of this course is to study problems of juvenile delinquency and the theories that explain juvenile delinquency. Attention will be given to the work of youth agencies, legislative involvement and new approaches to the prevention of juvenile crime.

CJ 287 Police Academy (13-40) 21 Cr. Hrs.

Prerequisites: Consent of department before acceptance to the Police Academy.

This course is designed to prepare recruits in the proper techniques of investigation, crime scene process, patrol procedures, operations and techniques. Emphasis will be placed on conflict mediation, report writing, detention and prosecution of prisoners. First aid, investigations, evidence collection, disaster control, civil disorders and tactical operations will be covered in the course. (40 hrs. minimum weekly)

CM 107 Culinary Management - Food and Culture (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a cross cultural, interdisciplinary investigation in the relationships between the foods humans prepare and consume and the cultures they build. The course will demonstrate the ways intellectual, social, religious and political events affect the preparation of food in various civilizations and at various periods in human history.

CM 109 Hospitality Law (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides students with an overview of the general concepts of law as it relates to the hospitality industry. Contract, property, employee, guest, insurance, food and beverage responsibility and business operating structure issues will be covered. The emphasis will be on restaurant law, but applicability to other aspects of hospitality law, such as catering and hotel management, will be explored.

CM 203 Restaurant Concepts and Design (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will explore new concepts for the entrepreneur in the restaurant industry. New trends and restaurant décor along with facility layout and design will be emphasized.

CM 210 Wine and Spirits (3-0) 3 Cr. Hrs.

Prerequisites: Students must be at least 18 years of age to take this course [MCL 436.1703 Section 703, (10)].

This course will provide comprehensive, detailed information about the origins, production and characteristics of all types of alcoholic beverages, including beer, wine and distilled spirits, such as whiskies and brandies. Attention will be given to table, sparkling and dessert wines. The student will gain an understanding of regional beverage styles of North America, the British Isles, France, Italy, Germany, the Iberian Peninsula and the Southern Hemisphere. Production practices and regulations, climatic and political influences, beverage characteristics and deductive evaluation methods will be studied. This is an elective course.

CM 309 Culinary Law (3-0) 3 Cr. Hrs.

Prerequisites: ENG 102.

This course provides students with an opportunity to interpret the general concepts of the law as related to culinary operations. Various aspects of the law will be explored, including torts, contracts, business structures and property rights. Emphasis will be on the ramifications of the law associated with the rights and responsibilities of employees, guests and restaurant owners under diverse situations.

CNT 210 CCNA Networking 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.
Recommended: Basic knowledge and/or experience in the field of IT or successful completion of CIS 115.

This is the first of four courses designed to prepare students for the Cisco Certified Network Associate (CCNA) certification. Fundamental networking topics including structure, functions, components, media, addressing and common protocols are introduced. Students will perform basic network device configuration.

CNT 220 CCNA Networking 2 (4-0) 4 Cr. Hrs.

Prerequisites: CNT 210 with a minimum grade of 2.0.

This is the second of four courses designed to prepare students for the Cisco Certified Network Associate (CCNA) certification. Students will configure and troubleshoot switching and routing technologies used in small to medium networks. Topics include virtual LANs (VLANs), routing, dynamic routing protocols and basic security topics.

CNT 230 CCNA Networking 3 (4-0) 4 Cr. Hrs.

Prerequisites: CNT 220 with a minimum grade of 2.0.

This is the third of four courses designed to prepare students for the Cisco Certified Network Associate (CCNA) certification. In this

course, network topics are expanded to include components, technologies and protocols that are used to create and manage larger and more complex networks. Students will implement and troubleshoot advanced routing configurations, technologies that improve the performance and reliability of local area networks and additional protocols needed within networks.

CNT 240 CCNA Networking 4 (4-0) 4 Cr. Hrs.

Prerequisites: CNT 230 with a minimum grade of 2.0.

This is the final course designed to prepare students for the Cisco Certified Network Associate (CCNA) certification. Course topics include wide area network (WAN) and virtual private network (VPN) technologies and other services such as Simple Network Management Protocol (SNMP) and NetFlow. Students will configure and troubleshoot network technologies that are required in complex networks.

COLLS 50 College Reading (4-0) 4 Cr. Hrs.

Prerequisites: Reading Placement Score ACT 11 - 14, SAT 18 - 21, CPT 32 - 56.

This course focuses on developing vocabulary and comprehension skills in group and lab settings. Students will explore and develop reading strategies to improve reading and vocabulary fluency.

COLLS 53 Critical Reading and Thinking Applications (4-0) 4 Cr. Hrs.

Prerequisites: COLLS 50 or Reading Placement Score ACT 15 - 17, SAT 22 - 24, CPT 57 - 69.

This course focuses on developing brain-based comprehension strategies to actively read and process information from a variety of texts. Students will study test taking, including proper question/answer techniques. They will learn a variety of vocabulary strategies as well as strategies to critically analyze, synthesize and evaluate argumentative and expository essays.

COLLS 105 Learning Skills (1-0) 1 Cr. Hrs.

Prerequisites: 30 credit hours and consent of the Department.

This course is designed to provide students with the learning skills and support necessary to successfully balance academic and other life demands. Students will apply techniques to their personal situations and course load requirements.

COLLS 111 Electronic Portfolio (1-0) 1 Cr. Hrs.

Prerequisites: None.

This course introduces the Schoolcraft College Electronic Portfolio. Students will engage the college learning experience by 1) growing an awareness of the college's expectations that they will acquire the attitudes, skills, knowledge and ability characteristic of generally educated persons, 2) understanding the changing nature of the college learning focus from acquisition of courses and credits to providing demonstrable evidence of their learning outcomes and 3) starting the process of creating their personal electronic portfolios as the primary vehicle for showcasing their demonstrable evidence. Students will leave the course with some experience in the college learning environment, knowing the kind of expectations they will meet in their courses and programs and the beginnings of their own Schoolcraft College Electronic Portfolio on electronic media.

COLLS 130 Applied Learning Theory for Nursing Majors (3-0) 3 Cr. Hrs.

Prerequisites: COLLS 53 or Reading ACT18+, SAT 25+, CPT 70+ required.
Recommended: BIOL 101.

This course is designed to prepare nursing students for the demands of the nursing program. Emphasis will be placed on developing and applying critical reading, thinking and learning strategies to nursing content. Topics covered in the course are reading speed/comprehension, reading study system, lecture note taking, time/goal management, test preparation/test taking and mathematics, as well as assistance with TEAS preparation. This course will help students prepare to handle courses offered throughout the entire nursing program.

COLLS 211 Electronic Portfolio - Exit Course (1-0) 1 Cr. Hrs.

Prerequisites: COLLS 111.

This course concludes the process of building the Schoolcraft College Electronic Portfolio begun in COLLS 111. Students will review their college learning experience as well as collect, organize and reflect upon evidence that they have developed attitudes, skills,

knowledge and abilities associated with a generally educated person during that experience. Students will create personal program-level portfolios following the college's specified guidelines that demonstrate their academic achievements and showcase what they have to offer as Schoolcraft College graduates. The college may select a sample of the portfolios produced for assessment of institutional or program outcomes.

COMA 103 Fundamentals of Speech (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course develops essential skills through directed practice in a variety of speech situations and furnishes basic knowledge necessary for intelligent speech improvement; stress is on speaker's ideas, attitudes and audience adjustment.

COMA 200 Interpersonal Communications (3-0) 3 Cr. Hrs.

Prerequisites: COMA 103 or consent of instructor.

This course provides study and practical application exercises in the basic elements of interpersonal communication with emphasis on self-concept, perception, meanings, listening, feedback, defensive communication barriers and nonverbal communication. Special attention will be given to improving interpersonal communication skills.

COMA 201 Discussion (3-0) 3 Cr. Hrs.

Prerequisites: COMA 103 or equivalent.

This course conveys a better understanding of human affairs. The student will review attitudes and skills for effective participation in discussion including cooperative thinking, exchange of ideas and problem solving.

COMA 210 Communication for Leaders (3-0) 3 Cr. Hrs.

Prerequisites: COMA 103.

This course is an exploratory examination of the leadership role within today's professional arena. The course is designed as an overview to develop communication awareness and effectiveness in teams of leaders within the community, corporate interviews, small group discussions and problem-solving in staff meetings and presentations as well as an examination of communication barriers.

COMA 230 Introduction to Mass Communication (3-0) 3 Cr. Hrs.

Prerequisites: COMA 103.

Understanding media in today's world is more than a scholarly exercise; it is a necessary survival skill in a world that has been utterly changed by mass communication. All students, whether they will be practitioners, critics or consumers, have to be able to analyze the ways in which mass media is being used to change the world. This course provides the tools needed to accomplish this analysis.

COMPS 124 Introduction to Personal Computers and Software (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is designed to introduce the student to the hardware and software aspects of the personal computer. The student will learn to identify the key components of the computer. Numbering systems, digital logic, memory devices, digital circuits and systems will be introduced to the student. An introduction to operating systems will be covered. The student will learn how a computer operates, how data is organized on a hard drive, how to format disks and how to transfer data.

COMPS 126 Technical Programming (3-0) 3 Cr. Hrs.

Prerequisites: Computer and keyboarding experience highly recommended.

This course will introduce the student to the steps involved in writing a Windows program using the Visual Basic programming language. The course focuses on user interfaces, program structure, language syntax and implementation details. The student will also use the computer as a tool in problem solving.

COMPS 147 Computer and Peripheral Maintenance and Management (2-2) 4 Cr. Hrs.

Prerequisites: COMPS 124.

This course is designed to introduce the student to PC and peripheral maintenance and management. The student will learn how to

maintain, upgrade and support a PC system. System improvement will center on topics of hardware, as well as software. Students will examine proper system and component care, failure-prone items, and how to isolate, locate and identify a failing component within the PC system.

COR 110 Introduction to Corrections (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course blends theory and operational knowledge for corrections. Students learn about the early development of corrections, sentencing, prisons, probation, parole, prisoner rights, community corrections, the role of the correctional officer and current concerns.

CUL 102 Culinary Sanitation (2-0) 2 Cr. Hrs.

Prerequisites: None.

This course introduces the theory and practice of sanitation and safety and their relationship to the hospitality industry. Topics include the study of food-borne illnesses and safety: biological, chemical and physical hazards, cross-contamination, personal hygiene, sanitation, safety regulations and the use and care of equipment. Hazard Analysis Critical Control Point (HACCP) and Occupational Safety and Health Administration (OSHA) guidelines and standards, as they apply to the hospitality industry, will be introduced. Upon successful completion of this course, the student will be prepared to take the National Restaurant Association ServSafe Food Protection Manager Certification exam.

CUL 103 Introduction to Professional Cooking Skills and Technique (1-4) 4 Cr. Hrs.

Prerequisites: None.

This course will provide the aspiring chef a broad orientation to the culinary industry so that they will better understand what is required to succeed. Emphasis for discussion will be on professionalism, safety and sanitation standards, equipment identification, identification of food products, knife handling skills and a basic understanding of stock making and basic cooking techniques. Students will be required to purchase an initial 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.

CUL 124 Breakfast and Pantry (1-4) 3 Cr. Hrs.

Prerequisites: CUL 102 or current ServSafe certification. CUL 103.
Corequisites: CUL 125. CUL 144.

This course will teach students all the necessary procedures and principles in basic cooking skills as related to breakfast and pantry cookery. Topics covered are egg, potato, meat and cereal cookery. Buffet setups and recipe procedures will be taught. Pantry cookery skills will include basic pantry operation, simple and composite salads, salad dressings, fruit trays and cold sandwich preparation.

CUL 125 Pastries 1 (1-5) 3 Cr. Hrs.

Prerequisites: CUL 102 or current ServSafe certification. CUL 103.
Corequisites: CUL 124. CUL 144.

This course will teach students all the necessary procedures and principles in the art of creating and producing many variations of beginning pastries. Upon successful completion of the course, the student will be able to use measuring equipment and understand equivalents and conversions; understand and know proper usage of baking and pastry terminology; properly use hand tools and machinery; regulate and use an oven properly; understand health, safety and sanitation of work areas; make pies, puddings, pastries, cakes and tortes.

CUL 128 Introduction to Food Techniques (1-3) 3 Cr. Hrs.

Prerequisites: CUL 102 or current ServSafe certification. CUL 103.
Corequisites: CUL 142. CUL 143.

This course will teach the basic fundamentals of cooking techniques. The student will understand the methods of basic sauces, stocks, coulis and soup preparation. The student will also learn to apply the appropriate cooking methods for specific cuts of meat,

fish, poultry and game. Vegetable and starch cookery will also be included. Specialty cuisines will also be explored, which will include nutritional, vegetarian, vegan and live foods.

CUL 142 Butchery (1-3) 3 Cr. Hrs.

Prerequisites: CUL 102 or current ServSafe certification. CUL 103.
Corequisites: CUL 128. CUL 143.

Students will learn commercial meat preparation, its fabrication, portion control and the importance of safe sanitary butchery practice. Students will select and prepare quality meats, fish and poultry for industry consumption and retail use. Students will be prepared to perform these important tasks in a safe and sanitary environment.

CUL 143 Dining Room Service (1-4) 3 Cr. Hrs.

Prerequisites: CUL 102 or current ServSafe certification. CUL 103.
Corequisites: CUL 128. CUL 142.

Upon successful completion of the course, the student will be able to apply dining room procedures which include: identifying the seven service types, basic hot and cold beverage services, professional ethics, good self-image, dependability, attitude, dedication, understanding the art and science of employee relationships and the value of customer relationships.

CUL 144 Baking (1-4) 3 Cr. Hrs.

Prerequisites: CUL 102 or current ServSafe certification. CUL 103.
Corequisites: CUL 124. CUL 125.

This course explores the concepts of the different varieties of flour, the purpose and chemical reaction of other ingredients in yeast doughs and quick breads, the nutritional value of baked goods, how to use equipment for baking, proofing and fermentation of yeast products, the different mixing methods, how to increase standard recipes and costing out a recipe. In addition, students will develop hands on practical experience with bakery products by producing French breads, rolls, pan breads, rye breads, whole wheat breads, corn bread, Danish pastry, coffee cakes, muffins, biscuits, quick breads and cookies.

CUL 215 Charcuterie (1-4) 3 Cr. Hrs.

Prerequisites: CUL 124. CUL 125. CUL 128. CUL 142. CUL 143. CUL 144.
Corequisites: CUL 227. CUL 244.

Students in this course will acquire professional skills in variations of hors d'oeuvres and savories, seasonings, condiments and stuffed meats and curing, pickling and smoking of meat, fish and poultry. Proficiencies in sausage-making, garde manger, pâtés, terrines, galantines and stuffed meats are also taught.

CUL 227 Restaurant Cooking and Preparation (1-4) 3 Cr. Hrs.

Prerequisites: CUL 124. CUL 125. CUL 128. CUL 142. CUL 143. CUL 144.
Corequisites: CUL 215. CUL 244.

Students will participate in four workstations: Roast Grill, Sauté, Entremetier (middle station) and Garde Manger Pantry. Students will learn classical and modern cooking techniques, recipe development, importance of consistency and clean work methods.

CUL 240 Pastries 2 (1-4) 3 Cr. Hrs.

Prerequisites: CUL 124. CUL 125. CUL 128. CUL 142. CUL 143. CUL 144.
Corequisites: CUL 242. CUL 243.

This course will cover the more intricate methods of producing fine pastries, mousses, cakes, tortes, ice cream desserts and chocolate work. The instruction covers recipe expansion and plate presentations.

CUL 241 Culinary Nutrition (2-0) 2 Cr. Hrs.

Prerequisites: None.

This course explores nutrition and the relationship between nutrition and health. Topics such as vegetarianism, food fads, obesity, weight control and portion sizes are studied. Students will learn how to apply nutritional concepts in menu planning in order to prepare healthful foods that are pleasing to both the eye and the palate to cater to the growing number of health-minded customers.

CUL 242 À la Carte (1-4) 3 Cr. Hrs.

Prerequisites: CUL 124. CUL 125. CUL 128. CUL 142. CUL 143. CUL 144.
Corequisites: CUL 240. CUL 243.

Upon successful completion of this course, the student will be able to apply modern techniques in the preparation and presentation of food using sauté and grill techniques. Students will gain an understanding of the entremetier, garde manger and food storage stations. Proper lock-down and clean up procedure will be taught. Preparation and presentation of salads, cold meats, sandwiches, as well as plate presentation will also be taught.

CUL 243 Storeroom Operations (1-2) 2 Cr. Hrs.

Prerequisites: CUL 124. CUL 125. CUL 128. CUL 142. CUL 143. CUL 144.
Corequisites: CUL 240. CUL 242.

Upon successful completion of this course, the student will have a basic knowledge of purchasing, receiving and inventory control through the use of the computer and the application of computer software which will enhance his/her ability to run a more effective and profitable kitchen operation.

CUL 244 International and American Cuisine (2-7) 6 Cr. Hrs.

Prerequisites: CUL 124. CUL 125. CUL 128. CUL 142. CUL 143. CUL 144.
Corequisites: CUL 215. CUL 227.

Students will learn the culture, history and terminology of various American regional and international cuisines. In addition, they will study traditional and contemporary cooking techniques. Students will prepare à la carte service entrées, salads, appetizers, soups and desserts based on industry trends as well as preparing buffet presentations. The menu items will be offered to the public and served in the American Harvest Restaurant.

CUL 247 Banquets and Catering (2-2) 3 Cr. Hrs.

Prerequisites: CUL 103.

Upon successful completion of this course, the student will demonstrate knowledge of a variety of catering operations including planning, organizing, marketing and executing receptions, parties and special events. Students must participate in two events. This is an elective course.

CUL 260 Competitive Ice Carving (2-2) 3 Cr. Hrs.

Prerequisites: None.

This course will present safety procedures related to ice handling, tools and equipment used in ice carving. Qualities of carving ice, proper care and sharpening of tools are also covered. Use of templates and production of basic carvings will be accomplished. This is an elective course.

CUL 267 Chocolatier (1-3) 3 Cr. Hrs.

Prerequisites: CUL 103 and CUL 125 or consent of department.

This course is designed to introduce the student to the handling techniques of chocolate. Students will learn to use artistic pieces to decorate cakes and adorn pastry buffets. Students will also be exposed to modeling and sculpting of chocolate centerpieces and chocolate truffle making. This is an elective course.

CUL 295 Salon Competition 1 (2-2) 3 Cr. Hrs.

Prerequisites: Selection to participate is approved by the chef instructors.

Students will participate in a class which will build and refine their culinary skills. This first course will introduce the students to the requirements necessary to successfully compete in culinary competition. Students selected for this class may form the College Culinary Team. A number of field trips and training sessions, off campus, will be scheduled. This is an elective course.

CUL 297 Salon Competition 2 (2-3) 4 Cr. Hrs.

Prerequisites: Approval to participate is made by the Chef Instructor and satisfactory completion of CUL 295.

A continuation of Salon Competition 1 for students who have decided to compete at state, national and/or international level culinary competition(s). The students must have demonstrated proficiency for competition in Salon Competition 1 to be approved as

participants in this advanced course. Selected students form a College Culinary Team and, as such, can represent Schoolcraft College in culinary competition(s).

CUL 303 Culinary Program Practicals (1-4) 5 Cr. Hrs.

Prerequisites: Active ServSafe Certification. CIS 120. College Level Math or ACT score of 19 or higher or SAT score of 25 or higher. College Level Reading or ACT score of 18 or higher or SAT score of 25 or higher. College Level Writing or ACT score of 18 or higher or SAT score of 25 of higher. Completion of an accredited ACFEF culinary program or consent of department.

This course is designed to be an orientation to the Culinary bachelor degree programs. Students will demonstrate proper culinary skills. Learning strategies will focus on knife handling skills, team skills and professionalism, safety and sanitation, financial control practices, equipment utilization, identification of food products, nutritional guidelines, cold food garde-manger, butchery skills, an awareness of international cuisines and cultures and a high level of understanding of culinary techniques. Application of appropriate technology for a career in the Culinary Arts, along with critical research skills, will be addressed.

CUL 350 Food Safety Management (3-0) 3 Cr. Hrs.

Prerequisites: CUL 102 or consent of department.

This course prepares the student to manage personnel and equipment to ensure food safety. Students will learn to purchase, receive, store and distribute food supplies and equipment following established sanitation and quality standards. They will utilize HACCP guidelines to protect food during all phases of preparation, holding and transportation. Application of safety and sanitation regulations related to physical resources and routine maintenance inspection of equipment will be covered. Management skills to assure employee compliance, safe workflow, training, proper food production and safe equipment use will be emphasized.

CUL 360 Purchasing Control (2-1) 2 Cr. Hrs.

Prerequisites: CUL 303 or consent of department.

Upon successful completion of this course, the student will have an advanced understanding of the purchasing cycle, business control plans, competitive bidding techniques, purchasing specifications, cash control, budgetary planning, equipment purchasing, cost controls, bidding and receiving. This will be accomplished using industry specific software designed to create a more profitable business operation.

DSGN 180 Machine Elements and Design (3-2) 4 Cr. Hrs.

Prerequisites: CAD 106 and MATH 113. CAD 211 or CAD 221.

This course is designed to introduce the student to the various machine elements and the mechanical/working relationship between elements that make up a mechanism. The machine element concepts covered include fasteners, gears, cams, linkages and bearings. The introduction to the design process includes problem definition, needs analysis, design/performance objectives, cost analysis, design alternatives, feasibility analysis and design selection. Simulation is used to test design proposals for strength and reliability.

DSGN 250 Tool, Die and Fixture Design (2-4) 4 Cr. Hrs.

Prerequisites: CAD 107 DSGN 180 and CAD 211 or CAD 221.

Tool, Die and Fixture Design is a specialized phase of mechanical or manufacturing engineering. This course will cover the development of jigs and fixtures, work holding devices and press working tools such as cutting dies, piercing dies, forming dies and drawing dies. Emphasis is placed on the types of tools, supporting and locating principles, clamping methods, construction methods, theory of metal cutting and metal forming. Design projects are used to reinforce theory and to provide an opportunity to gain practical experience. Sketching and CAD will be used to develop, create and design customs jigs, fixtures, dies and die types. ANSI/ASME Standards are followed for the creation of solid models, multi views, drawings, tolerances and dimensioning practices.

DSGN 280 Capstone Project (3-2) 4 Cr. Hrs.

Prerequisites: MET 103 , MFG 105 , CAD 107 and DSGN 180 or consent of instructor.

This course utilizes a multidiscipline capstone project to integrate the concepts of design, manufacturing and material science. Working as a team, a design problem will be presented requiring solutions which involve the management of the design process using the systematic engineering design process. The steps include project planning, research, modeling, analysis, prototype

building, process mapping and material selection. The results of the project will be reported in written and oral format and presented to a panel for evaluation. Faculty directed study will be provided.

ECE 100 Foundations of Early Childhood Education (2-0) 2 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken.

Students will be provided an introduction to the field of Early Childhood Education. This introduction includes theories of child development, information on key professional and regulatory organizations, relevant laws and regulations, discussion on opportunities within this field, the National Association for the Education of Young Children (NAEYC) code of ethical conduct, the NAEYC Standards, the Michigan Core Competencies for the field, Child Protection Law and developmentally appropriate practices. Students will spend time observing and analyzing a variety of early childhood programs. Students are required to visit five of the six early childhood program types to be eligible to earn credit for the course. A Michigan Department of Human Services Central Registry Clearance is required to be presented to the instructor prior to the scheduling of the first early childhood program visit.

ECE 110 Child Development (3-0) 3 Cr. Hrs.

Prerequisites: Minimum test score of 18 on Reading portion of ACT, 25 SAT or 70 CPT. Minimum test score of 18 on English portion of ACT, 25 on Writing and Language portion of SAT or 71 CPT.

This course is designed to provide students an overview of development from the prenatal time period through emerging adulthood. The course will concentrate on physical, cognitive, social and emotional development in the prenatal, infancy, toddler, preschool, middle childhood, adolescence and emerging adulthood. Emphasis is placed on understanding development in the context of educational settings.

ECE 120 Creative Activities (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken.

The purpose of this course is to introduce students to the stages of creativity development in children. Open-ended processes, multi-media materials and creative activities across the arts curriculum will be emphasized that are appropriate for children and persons with developmental challenges. Students will be exposed to the importance of the arts and aesthetic environments related to the educational experience.

ECE 130 Preschool Education with Field Experiences (4-4) 5 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

This course is designed to assist students in knowing and understanding the characteristics and needs of the preschool child and methods by which they are met. There will be a focus on stages of development and typical behaviors. Students will use their own knowledge and other resources to design, implement and evaluate meaningful, challenging curriculum for children. Students will have a 60 hour field experience working directly with preschool children as part of this course. Field experiences must be passed with a minimum grade of 2.5. Students must successfully pass the course with a 2.5 in order to be eligible to earn credit for the course. Students have a maximum of two attempts at taking and passing the course. If a student does not pass the course after the second attempt, he will no longer remain in the program.

ECE 140 Infant and Toddler Education with Field Experiences (4-4) 5 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

This course is designed to prepare students to provide care for infants and toddlers in group settings. Students will learn the essential ingredients in infant and toddler education and will be exposed to matching teaching strategies to very young children as they develop. A holistic emphasis focuses on the development of a curriculum which provides for the physical, emotional, social and cognitive development of infants and toddlers. Students will have a 60 hour field experience working directly with infants and toddlers as part of this course. Field experiences must be passed with a minimum grade of 2.5. Students must successfully pass the course with a 2.5 in order to be eligible to earn credit for the course. Students have a maximum of two attempts at taking and passing the course. If a student does not pass the course after the second attempt, she will no longer remain in the program.

ECE 150 Before and After School Programming for Children (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

This course is designed to identify the developmental tasks of middle childhood (ages 6-12) and suggest ways that program providers can help foster healthy growth and development. Emphasis will be on understanding the needs of students during the before and after school hours and methods by which they are met. Programming that enhances creativity, independence and academic achievement will be explored.

ECE 160 Child Development Associate CDA Credential Assessment Preparation (1-0) 1 Cr. Hrs.

Prerequisites: ECE 100 , ECE 120 and consent of department.
Corequisites: ECE 130 (with a grade of 2.5 or higher) or ECE 140 (with a grade of 2.5 or higher) if not previously taken.

This course is designed to support the CDA Candidate in preparation for the final assessment process. To be awarded the Child Development Associate - CDA - credential, a candidate must present evidence to The Council for Early Childhood Professional Recognition of his/her competence as an early childhood educator. The CDA credential is a national credential in the field of early childhood education for persons currently working in the field. Enrollment in this course is open only for students who are currently employed in the field of early childhood education. Students must meet the candidate criteria established by the Council for Early Childhood Professional Recognition. Specific criteria can be found at the CDA Council website www.cdacouncil.org.

ECE 170 Curriculum, Assessment and Technology (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

The focus of this course is on understanding curriculum and its development, assessment methodologies and technology use in education. Students will be exposed to educational curricula, best assessment practices and resources for the educator for technology use within the classroom. Students will explore current tools and issues related to technology use in education.

ECE 180 Child and Family Welfare Services (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken.

This class explores the importance and complex characteristics of diverse families and communities. There will be a focus on identifying needs of families and strength-based methods through which those needs are met. Emphasis is placed on understanding the importance of child protection and the impact of abuse and neglect. This is a program required service learning course.

ECE 230 Classroom Behavior - Understanding Social Competence (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

The course is designed to introduce students to the role of social competence in the lives of children. Students are introduced to the development of social competence, principles of group functioning, behavior expectations and appropriate strategies of behavior management in the classroom and the impacts of trauma on children's behavior. In addition, the role of educators for promoting self-regulation, peer relationships and healthy problem solving techniques for children is explored. Emphasis is placed on respecting children and understanding influences on child behavior. This is a program required service learning course.

ECE 240 Administration of Early Childhood Programs (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

This course will cover methods of administering an early childhood education program reflecting best practices in the field. Included will be current laws, regulations, ethical guidelines and other professional standards related to early childhood practice. Establishing an original program will be related to understanding the business need for comprehensive development of guidelines for children, staff and families taking part in the program.

ECE 250 Literacy and Numerical Thinking (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

This course explores literacy and numerical thinking in children. An emphasis will be placed on constructivist and sociolinguistic views of learning. Experiential exercises, course readings and activity development will provide students with opportunities to plan developmentally appropriate learning activities, to record observations of children and to generate analysis that support literacy and numerical thinking development. Students will have hands-on learning experiences to share their lessons on literacy and numerical

thinking with children.

ECE 260 Early Childhood Advanced Practical Experiences (2-10) 4 Cr. Hrs.

Prerequisites: ECE 130 with a grade of 2.5 or higher.

Students will have a supervised practical experience working directly with children in an early childhood preschool classroom. Students will spend 150 hours over the semester in their practical field placement. They will have increased responsibility planning and implementing activities for children as well as directing the overall day. Emphasis will be placed on working as a contributing member of a teaching team. Students must earn a minimum grade of 2.5. Students have a maximum of two attempts at passing the course. Students that do not pass the course after the second attempt will not be able to remain in the program.

ECE 280 Emerging Educator (1-0) 1 Cr. Hrs.

Prerequisites: Consent of department.

This capstone course is a required conclusion to the Schoolcraft College Early Childhood Education and Special Education Degree Programs. It is designed for students to demonstrate competencies in their designated program of study of early childhood or special education. In the Emerging Educator course, students will develop a portfolio allowing them to present evidence of skills and knowledge gained through the program. This is the final course taken by students in their program of study. Students are to contact the Early Childhood Education or Special Education department for confirmation of eligibility for taking this course prior to registering for the class.

ECON 103 Introductory Economics (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a survey of the macroeconomic concerns of national income determinations, business cycles, unemployment, inflation and both fiscal and monetary policies to stabilize the aggregate economy. In addition, this course explores the microeconomic fundamentals of demand, supply, elasticity, consumer choice, the production costs of output and resource allocation of firms operating under various market structures and the international economy.

ECON 201 Principles of Macroeconomics (4-0) 4 Cr. Hrs.

Prerequisites: MATH 53 or equivalent.

Macroeconomics refers to that portion of economic analysis which is concerned with behavior of economy-wide issues, e.g., inflation, unemployment, etc. By means of theoretical reasoning and empirical research, economists have identified a number of relationships or principles which are useful in explaining and predicting macroeconomics, their application to an understanding of current economic problems and their implication for economic policy. The intent of the course is to provide the student with a basic level of economic literacy essential for a well-informed citizenship in the years ahead. In economics, perhaps more than any other comparable discipline, things are not always what they appear to be. Indeed, many economic problems both past and present have resulted from the misunderstanding of fundamental economic relationships.

ECON 202 Principles of Microeconomics (4-0) 4 Cr. Hrs.

Prerequisites: MATH 47.

This course provides students with an introduction to the theory of consumer behavior, production theory, market structure in product and resource/factor markets and microeconomic policy.

EDUC 101 Introduction to Education (3-0) 3 Cr. Hrs.

Prerequisites: English: CPT 71 or above or ACT 18 or above or SAT 25 or above. Reading: CPT 70 or above or ACT 18 or above or SAT 25 or above.

This is an introductory course for prospective education majors, designed to explore the teaching profession. Students will gain insight into the practical elements of becoming an educator through an overview of the foundational philosophies of education, best practices, classroom management, education law and policies and trends. Students will be introduced to Michigan standards and requirements for teacher certification. Students will complete 15 hours of relevant field work.

EDUC 110 Child Development (3-0) 3 Cr. Hrs.

Prerequisites: Minimum test score of 18 on Reading portion of ACT, 25 on SAT or 70 CPT. Minimum test score of 18 on English

portion of ACT, 25 on Writing and Language portion of SAT or 71 CPT.

This course is designed to provide students an overview of development from the prenatal time period through emerging adulthood. The course will concentrate on physical, cognitive, social and emotional development in the prenatal, infancy, toddler, preschool, middle childhood, adolescence and emerging adulthood. Emphasis is placed on understanding development in the context of educational settings.

EDUC 200 Children with Special Needs (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken.

This course is designed to introduce students to the topic of children/students with special needs. Included is the exploration of cognitive impairments, emotional impairments, learning impairments, visual and hearing impairments, orthopedic and/or other health impairments, giftedness and instructional strategies for these special needs.

EDUC 205 Promoting Learning in a Diverse Society, Using Family, School and Community Partnerships (3-0) 3 Cr. Hrs.

Prerequisites: EDUC 101.

Students will learn about the relationship between schools and society within the context of the culturally diverse American society, in addition to the role of the teacher in promoting educational equity and quality for all students. Emphasis will be placed on the theory and practice of supporting families, connecting with community resources, and building partnerships in schools to promote student learning. Students will complete 15 hours of relevant field work.

EDUC 210 Elementary Instructional Strategies (3-0) 3 Cr. Hrs.

Prerequisites: Admission to the Alternative Route to Interim Teacher Certification Program.

This course is designed to provide in-depth exploration of and practice with essential elements associated with being a professional elementary educator. Students will gain knowledge of and practical experience with lesson planning, classroom management strategies, student motivation and learning, using technology to enhance learning and collaboration in the learning environment. Students will review current best practices in elementary instruction, assessment, curriculum design and community relationships. Students will complete 10 hours of relevant field work.

EDUC 220 Secondary Instructional Strategies (3-0) 3 Cr. Hrs.

Prerequisites: Admission to the Alternative Route to Interim Teacher Certification Program.

This course is designed to provide in-depth exploration of and practice with essential knowledge, skills and disposition for secondary educators. Students will review current best practices in secondary instruction, assessment and curriculum design. Students will gain knowledge and skills to effectively plan and teach secondary lessons. Students will also study and observe the roles and attributes of successful secondary education teachers. Students will complete 10 hours of relevant field work.

EDUC 230 Teaching Literacy in the Elementary Classroom 1 (3-0) 3 Cr. Hrs.

Prerequisites: Admission to the Alternative Route to Interim Teacher Certification Program.

This course will focus on the stages of literacy development, reading and writing processes and a comprehensive look at research based literacy instruction in the elementary classroom. Instructional strategies to teach word recognition, reading comprehension and process writing will be examined in depth. The use of standards-based lesson planning and both formal and informal assessment to promote effective instruction is also covered. Students will learn how to utilize technology in the classroom to enhance literacy instruction and how to implement a system of management for comprehensive balanced literacy instruction. Strategies to identify and assist struggling readers will be explored. Students will complete 10 hours of relevant field work.

EDUC 240 Teaching Literacy in the Elementary Classroom 2 (3-0) 3 Cr. Hrs.

Prerequisites: EDUC 230.

This course will focus on research-based, instructional strategies that foster literacy in the elementary classroom. Strategies include identifying and assisting struggling readers and writers, creating instructional activities that meet the needs of individual learners, developing authentic assessments to monitor on-going student progress and ultimate skill mastery and utilizing technology to augment reading and writing. Knowledge of the stages of literacy development and its elements will be reinforced. Students will review current literature on literacy and, in collaboration with other students, synthesize ideas of theory and practice.

EDUC 250 Teaching Literacy in the Secondary School (3-0) 3 Cr. Hrs.

Prerequisites: Admission to the Alternative Route to Interim Teacher Certification Program.

This course is designed to provide in-depth exploration of literacy instruction in the secondary classroom. Students will explore strategies for teaching literacy in the secondary content areas for all learners, including those from diverse backgrounds and ESL learners, as well as struggling readers and writers. Factors impacting and strategies for supporting secondary literacy instruction will be discussed and demonstrated. Current best practices in the field will be reviewed. Students will complete 10 hours of relevant field work.

EDUC 260 The Professional Educator (1-0) 1 Cr. Hrs.

Prerequisites: Consent of Department.

This course will address the knowledge, skills and dispositions which are demonstrated by a highly qualified, effective teacher. Students will collect, organize and reflect upon evidence that demonstrates their attitudes, skills, knowledge and abilities as an effective educator. This is the capstone course for the Alternative Route for Interim Teacher Certification Program.

EDUC 270 Instructional Technology (1-2) 3 Cr. Hrs.

Prerequisites: EDUC 101 , EDUC 200 , EDUC 205 and either EDUC 110 or PSYCH 249.

Students will examine and apply the effective use of technology to student learning in grades K-12. They will evaluate instructional media materials, courseware and software for classroom use and develop materials using various software applications to support classroom instruction and professional communications. Students will create a professional learning portfolio. This is the capstone course for the Teacher Education Transfer Program.

EDUC 290 Fieldwork Practicum (0-2) 2 Cr. Hrs.

Prerequisites: Consent of Department.

Students will spend a minimum of 60 clock hours observing, assisting and teaching in a classroom under the supervision of a certified classroom teacher. Students will also participate in four scheduled seminars.

ELECT 131 Basic Measurement and Reporting Skills (1-2) 3 Cr. Hrs.

Prerequisites: None.

This course is designed for students who are pursuing a career in electronics or electronic related fields. The student will receive instruction on how to conduct career research and in the proper use of basic measuring instruments, such as the Digital Multimeter (DMM), the Volt-Ohm Meter (VOM), the sine wave generator and the oscilloscope. In the electronics laboratory, the student will make measurements, record data, maintain a logbook and develop conclusions based on the results. In the computer laboratory, students will learn how to organize and report their findings utilizing word processing, spreadsheet and presentation software.

ELECT 133 Introduction to Battery Technology (3-0) 3 Cr. Hrs.

Prerequisites: None.

Understanding batteries in today's commercial applications is becoming increasingly important. Batteries provide a means of storing energy for use in portable electronic devices ranging from personal entertainment to advanced medical, industrial applications, as well as a means to reduce emissions in electric and hybrid electric vehicles. The need to derive energy from solar, wind and other renewable forms of energy and store it underscores the importance of advanced energy storage solutions to the emerging global economy. This course will cover the principles and operation of batteries. The contrast between secondary and primary batteries will be studied. Specialized battery systems as well as fuel cells will also be covered.

ELECT 137 DC Circuits and Mathematical Modeling (2-3) 5 Cr. Hrs.

Prerequisites: MATH 53 or one year of high school algebra.
Corequisites: ELECT 131.

This course is the study of basic DC Fundamentals and mathematical modeling for the electronics careers which includes Ohm’s law, power law and Kirchhoff’s laws with application to solving series, parallel and series-parallel combination circuits. Other topics will include resistors, color code, magnetism, electromagnetism and test equipment. The mathematics skills needed for an electronics career will also be covered in this course. The student will be prepared to enter the second semester course of ELECT 138 AC

Fundamentals and Mathematical Modeling. Laboratory experiments and project(s) are utilized to teach the use of test equipment and to demonstrate the principals taught in lecture.

ELECT 138 AC Circuits and Mathematical Modeling (2-3) 5 Cr. Hrs.

Prerequisites: ELECT 137.

This course is designed to explore the theory and application of AC Fundamentals. Sine wave generation and analysis will be studied. The theory of Kirchhoff's laws will be used to solve AC series, parallel and series-parallel circuits using the method of phasors. Other topics covered include capacitors, inductors, transformers, resonance, passive filters, RC and RL circuits. Laboratory experiments are utilized to teach the use of common test equipment and to demonstrate the principals taught in lecture.

ELECT 139 Diodes and Transistors (1-2) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ELECT 138.

This course will introduce the students to various semiconductor devices starting with a discussion of internal construction, followed by circuit configurations, applications and troubleshooting techniques. Diodes will be discussed first and will include signal, rectifier, Zener and light emitting types. Transistor material will cover NPN and PNP bipolar types, J type FETs, enhancement and depletion MOSFETs. Finally, transistor switching circuits will be examined.

ELECT 144 Introduction to Microcontrollers (1-2) 3 Cr. Hrs.

Prerequisites: Computer and keyboarding experience are highly recommended.

This course will introduce the student to the concepts of microcontroller architecture, block components, numbering systems and microprocessor program editing software. Representative microcontroller commands and elementary programming of a microcontroller will be studied. Students will work with hands-on experiments, which they will learn to expand and customize for their personal needs.

ELECT 145 Fluid Power (2-2) 4 Cr. Hrs.

Prerequisites: MATH 53 or equivalent.

This course emphasizes the understanding of the fundamentals of hydraulics and pneumatics. In this course, students will design, analyze, operate and maintain fluid power systems. Emphasis is placed on understanding the physics of fluids and how energy, power and force affect the devices that make up a hydraulic and pneumatic system.

ELECT 180 LabVIEW Programming CORE 1 and 2 (2-3) 5 Cr. Hrs.

Prerequisites: Computer and keyboarding experience highly recommended.

This course will introduce the student to the programming concepts, techniques, features and functions involved in writing a LabVIEW program. The student will learn to create programs used in test and measurements, data acquisition, instruments control and data logging. The course focuses on user interfaces, program structure, language syntax and implementation details.

ELECT 215 Operational Amplifiers and Linear Integrated Circuits (2-2) 4 Cr. Hrs.

Prerequisites: ELECT 139.

This course will introduce the student to operational amplifiers (op amp) and linear integrated circuits. Op-amp circuit configurations, applications and troubleshooting techniques will be presented. Operational amplifiers will be presented with emphasis on applications and circuits such as inverting and non-inverting amplifiers, integrators, differentiators and filters. The coverage of linear integrated circuits includes voltage comparators, timers, oscillators, voltage regulators, special purpose amplifiers, communication circuits and data conversion circuits.

ELECT 218 AC/DC Motors (1-2) 3 Cr. Hrs.

Prerequisites: ELECT 137.
Corequisites: ELECT 138.

This course is designed to provide the student with a comprehensive understanding of motors used in industry. Principles and theories of magnetic fields and mechanical rotation will be covered. Basic through complex theories of rotor phase angles and effects on torque will be discussed. Magnetic and inductive theories, characteristics of various types of motors and speed control used in DC and AC type motors will be studied.

ELECT 219 Digital Logic Circuits (2-2) 4 Cr. Hrs.

Prerequisites: ELECT 139.

This course introduces students to Boolean algebra (emphasizing NAND and NOR) and various medium scale integrated circuits like exclusive or encoders, decoders, multiplexers, adders, counters and shift registers. Also explored are memory (core, RAM and ROM) and bidirectional line drivers. The laboratory work coincides with experiments utilizing digital integrated circuits.

ELECT 228 Electronic Troubleshooting (1-2) 3 Cr. Hrs.

Prerequisites: ELECT 215 and ELECT 219.

This course is a capstone which will apply the theory and practical application of the preceding electronics courses. The techniques of fault isolation and troubleshooting in solid state, analog, digital, motors and biomedical equipments and systems will be explored.

ELECT 251 Programmable Logic and Industrial Controls (2-2) 4 Cr. Hrs.

Prerequisites: Windows experience highly recommended.

The student will use Programmable Logic Controller (PLC) and Allen-Bradley RSLogix software to convert typical hardwired electrically controlled circuitry used in industry to a computer-controlled system. Emphasis will be placed on understanding the purpose and operating features of a PLC including input/output addressing and associated commands used in the PLC program. A computer will be used to write and download a program to be tested for logical control. The student will use Linx software and networking to learn communication procedures for downloading a PLC program to the controller as well as the types of cable connections used. PanelView will be reviewed to understand its real time monitoring capability of the software. Various PLC commands will be used including internal relays, ON and OFF timers, UP and DOWN counters, subroutines, program control and math instructions.

ELECT 252 Programmable Logic System Design (2-2) 4 Cr. Hrs.

Prerequisites: ELECT 251 or equivalent PLC experience.

The student will use Allen-Bradley RSLogix 500 software to be interfaced with RSLinx communication software and PanelView for control panel applications. Data Highway Plus will be used for network communications with other Programmable Logic Controllers (PLC) components. Emphasis will placed on incorporating and combining programming commands, timers, counters, subroutines, data manipulation and mathematics into control process systems. Installing, wiring and networking PLC systems will be covered. Students will learn how to use troubleshooting features of the PLC software to find and diagnosis hardware, configuration and programming problems.

ELECT 253 Individual Student Projects (1-2) 3 Cr. Hrs.

Prerequisites: By midterm of the previous semester, the student must submit a written proposal for approval by department.

Students will plan, organize, assemble or fabricate and test the project of their choice or one suggested by the instructor. Under guidance of the instructor, the electronic laboratory will be made available three hours a week in which time the student may perform tests.

EMT 115 Emergency Medical Technology - Basic (7-6) 10 Cr. Hrs.

Prerequisites: None.

The Basic Emergency Medical Technician course is a Michigan Department of Community Health 264.5 hour-approved course that provides the information and experience necessary to prepare the student to take the National Registry Basic EMT Certification Exam. Students learn the role and responsibilities of an emergency medical technician in providing emergency care. Content areas are covered in lectures, practical skills practiced in a laboratory setting along with observations and experience that will be gained in a clinical and/or internship setting.

EMT 210 Paramedic Technology - Module 1 (8-4) 10 Cr. Hrs.

Prerequisites: BIOL 236 and EMT 115.

This course provides information and experience to prepare the student for EMT 220. In addition, the EMT 210 course is designed to give students extensive knowledge and practical application that adds to the knowledge and skills acquired in the Basic EMT course.

This course includes advanced practice with a focus on preparatory entry-level paramedic skills. Content will be presented in the form of lectures, practical skills, which are practiced in a laboratory/simulation setting, along with observations and hands on experience in the clinical environment. This course has been approved by the State of Michigan, Department of Community Health, EMS and Trauma Systems section. The program follows both the State of Michigan and the National EMS Education standards for the Paramedic level. Upon successful completion of all three semesters of the Paramedic Program and the Field Internship, the student will be eligible to take the National Registry Cognitive and Psychomotor Examinations. When the candidate successfully passes both the Cognitive and the Psychomotor exam, the candidate will be eligible for State Licensing.

EMT 220 Paramedic Technology - Module 2 (8-5) 10.5 Cr. Hrs.

Prerequisites: EMT 210 and a valid State of Michigan Basic EMT license.

This course provides the information and experience to prepare the student for EMT 230. In addition, the EMT 220 course is designed to give students extensive practical application that builds upon knowledge and skills acquired in the EMT 210 course. This course includes advanced practice with a focus on patient assessment, cardiac, and medical emergencies. Content will be presented in the form of lectures and practical skills, which are practiced in a laboratory/simulation setting along with observations and hands-on experiences in the clinical environment. This course has been approved by the State of Michigan, Department of Community Health, EMS and Trauma Systems section. The program follows both the State of Michigan and the National EMS Education standards for the Paramedic level. Upon successful completion of all three semesters of the Paramedic Program and the Field Internship, the student will be eligible to take the National Registry Cognitive and Psychomotor Examinations. When the candidate successfully passes both the Cognitive and the Psychomotor exams, the candidate will be eligible for State licensing.

EMT 230 Paramedic Technology - Module 3 (6-6) 9 Cr. Hrs.

Prerequisites: EMT 220 and a valid State of Michigan Basic EMT License.

This course provides the information and experience to prepare the student for the National Registry Examination. In addition, the EMT 230 course is designed to give students extensive practical application along with the knowledge and skills acquired in EMT 210 and 220. This course includes advanced practice with a focus on patient assessment and traumatic emergencies in addition to EMS operations. Content will be presented in the form of lectures and practical skills, which are practiced in a laboratory/simulation setting, along with observations and hands on experience in the clinical environment. This course has been approved by the State of Michigan, Department of Community Health, EMS and Trauma Systems section. The program follows both the State of Michigan and the National EMS Education standards for the Paramedic level. Upon successful completion of all three semesters of the Paramedic Program and the Field Internship, the student will be eligible to take the National Registry cognitive and psychomotor examinations. When the candidate successfully passes both the cognitive and the psychomotor exams, the candidate will be eligible for State Licensing.

EMT 290 Paramedic Field Internship (1-20/40) 2 Cr. Hrs.

Prerequisites: Successful completion of EMT 230. Hold current AHA Basic Life Support for Health Care Providers Certification. Hold current AHA Advanced Life Support Provider Certification. Hold current State of Michigan Basic EMT license.

This final semester, formally known as the field internship, will serve as the capstone project for the paramedic program. During the capstone, the student will serve as a Team Leader. The Team Leader's responsibilities are delegated by direct observation and under the responsibility of an approved and trained preceptor who is appropriately licensed and credentialed to work in an approved EMS system. The student will be evaluated on his or her ability to perform skills as a competent entry-level paramedic. The capstone will serve as the final evaluation of the student prior to completion of the program and eligibility to take the National Registry of Emergency Medical Technicians-Paramedic credentialing exam. At the conclusion of the program, the expectation is the student will be prepared as a competent entry-level Emergency Medical Technician-Paramedic in knowledge, skills and behavior.

ENG 50 Modern English Grammar (3-0) 3 Cr. Hrs.

Prerequisites: Minimum placement test score of 10 ACT, 17 SAT or 35 CPT.

This is the first of a two-part sequence (ENG 050/055) designed to prepare students for composition courses. The course content focuses on major grammatical concepts and writing. A grade of 2.0 or better in ENG 050 is necessary to enter ENG 055.

ENG 55 Building Writing Skills (3-0) 3 Cr. Hrs.

Prerequisites: ENG 50 with a minimum grade of 2.0 or minimum placement test score of 15 ACT, 22 SAT or 51 CPT.

This is the second of a two-part sequence (ENG 050/ENG 055) designed to prepare students for composition courses. The course focuses on the writing process, paragraph development, revision and grammar.

ENG 100 Communication Skills (3-0) 3 Cr. Hrs.

Prerequisites: Minimum placement test score of 15 ACT, 22 SAT or CPT 51.

This course deals with a variety of written and oral communication skills. Students learn about the application of interpersonal and intrapersonal communication, including but not limited to presentations, interviews, collaborative work and technological tools as used in personal, social and career communications.

ENG 101 English Composition 1 (3-0) 3 Cr. Hrs.

Prerequisites: ENG 55 with a minimum grade of 2.0 or minimum placement test scores of 18 ACT, 25 SAT or 71 CPT.

This course teaches students to prepare and write a number of clear, well-developed essays using exposition and other rhetorical modes. This process assists students to build writing strategies and methodologies for college and professional writing.

ENG 102 English Composition 2 (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT.

This course teaches students to conduct and integrate research and write the research paper. This process assists students in developing research and writing strategies to use in a variety of college and professional contexts.

ENG 106 Business English (3-0) 3 Cr. Hrs.

Prerequisites: ENG 55 with a minimum grade of 2.0 or minimum placement test score of 18 ACT, 25 SAT or 71 CPT.

This course examines verbal and nonverbal communication theories and methods relating to business. Students write business documents and apply a variety of methods for collecting and presenting data.

ENG 107 Introduction to Journalism (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102.

This course is an introductory survey of mass media such as newspapers, magazines (print and online), radio, TV, advertising, public relations and the World Wide Web. The course will emphasize newspapers and magazines while recognizing news and feature values, discovering audience, reporting, writing and planning content and format.

ENG 116 Technical Writing (3-0) 3 Cr. Hrs.

Prerequisites: ENG 55 with a minimum grade of 2.0 or minimum placement test score of 18 ACT, 25 SAT or 71 CPT.

This course provides practical instruction in speaking, listening and technical writing for business and industry. Students learn to apply the principles of organizational structure, resume writing, job hunting, interviewing and technical reporting.

ENG 170 Modern Literature By and About Women (3-0) 3 Cr. Hrs.

Prerequisites: ENG 55 with a minimum grade of 2.0 or minimum placement test score of 18 ACT, 25 SAT or 71 CPT.

Reading and discussion of fiction, poetry, drama and prose by women writers of the 20th and 21st centuries. Students use literary analysis to explore women's literature as well as the experiences, roles and art of modern women and women writers.

ENG 200 Introduction to Film (4-0) 4 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

This course studies how film accomplishes its purposes, whether as simple entertainment, social commentary or complex art. Students will view and discuss selected films and explore the history, criticism, aesthetics and technique of film.

ENG 203 Children's Literature (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102.

This course surveys literature for children and adolescents in K-12 curriculum. By reading, analyzing and researching various genres

of children's literature throughout the world, students gain a historical perspective and establish standards of critical evaluation.

ENG 205 Creative Writing (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

Student creative writing may include work in poetry, short stories and drama. Some assignments will reflect student interests and abilities, while others may encourage students to expand their skills and discover new topics. Class activities will include critical evaluation of student work in individual conferences and writing workshops.

ENG 206 Creative Writing (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

Student creative writing may include work in poetry, short stories and drama. Some assignments will reflect student interests and abilities, while others may encourage students to expand their skills and discover new topics. Class activities will include critical evaluation of student work in individual conferences and writing workshops. The course may include work on individual writing projects.

ENG 221 Advanced Composition (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT and 108 CPT. Recommended: ENG 102 and college-level reading.

This course provides advanced composition theory and practice for students to develop writing skills beyond ENG 101 and ENG 102. It emphasizes the writing process, revision strategies and standard research techniques. It also encourages peer collaboration and evaluation to reflect professional writing.

ENG 243 Introduction to Literature - Short Fiction (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

Using elements of fiction, this course develops standards for critical evaluation to increase understanding and appreciation of short stories. Students read and analyze short fiction and its forms from early to modern times.

ENG 244 Introduction to Literature - Poetry (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

This course develops standards for critical evaluation to increase the understanding and appreciation of poetry. Students read and analyze poetry and its forms from early to modern times.

ENG 245 Introduction to Literature - Drama (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

Students will read and discuss a number of plays, especially those written since 1850. This course is designed to develop standards for critical evaluation and increase understanding and appreciation of drama as a literary form.

ENG 246 Introduction to Literature - Novel (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

The course examines classic, unique, and emerging examples of novels. Students use elements of fiction to critically evaluate novels, thereby expanding their understanding and appreciation for prose fiction.

ENG 248 Introduction to Literature - Shakespeare (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

This course develops standards for critical evaluation using elements of drama and poetry. Students read and analyze selected

Shakespearean works to understand and appreciate one of Western civilization's greatest playwrights.

ENG 251 American Literature from Colonial Times to the Civil War (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

Students read and analyze significant literary works that illustrate the changing currents of thought and expression that dominated American life from colonial times to the Civil War.

ENG 252 American Literature from the Late Nineteenth Century to the Present (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

Students read and analyze significant literary works that illustrate the changing currents of thought and expression that have dominated American life from the Civil War to the present.

ENG 275 World Literature - Casebook Studies of Universal Themes (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

This course will examine a variety of international literary works pertaining to common literary themes. Such themes will be explored through poetry, drama, fiction and/or non-fiction. Works not originally written in English will be read in translation.

ENG 280 The Nature of Language (3-0) 3 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0 or minimum placement test score of 22 ACT, 29 SAT or 108 CPT. Recommended: ENG 102 and college-level reading.

This course is an investigation of the historical background and current status of the English language, including problems such as the changing nature of language, dialect differences, origins of standards for correctness and attempts to describe the language grammatically.

ENGR 100 Introduction to Engineering and Technology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is designed to introduce students to the fields of engineering and engineering technology. Students will learn about the different engineering disciplines and will participate in projects related to engineering. Electronic portfolios will be introduced in this course.

ENGR 201 Statics (3-0) 3 Cr. Hrs.

Prerequisites: PHYS 211.

This course is designed to teach the student vector analysis of forces and moments in two- and three-dimensions. Equilibrium of particles and rigid bodies will be determined. Beams and trusses will be analyzed. Problems involving friction, center of gravity, moments of inertia and virtual work will be solved. This course is designed as an engineering transfer course. Transferability of this course into the desired engineering program should be confirmed with the transfer office.

ENGR 202 Mechanics of Materials (3-0) 3 Cr. Hrs.

Prerequisites: ENGR 201.

This course is designed to teach the students the fundamental concepts related to stress and strain of deformable bodies and their application to mechanical structures. This course is designed as an engineering transfer course. Transferability of this course into the desired engineering program should be confirmed with the transfer office.

ENGR 203 Dynamics (4-0) 4 Cr. Hrs.

Prerequisites: ENGR 201.

This course is designed to teach the student kinematics and kinetics of particles and rigid bodies including methods of motion relative to translating and rotating reference frames, force and acceleration, work and energy, impulse and momentum and vibrations. This course is designed as an engineering transfer course. Transferability of this course into the desired engineering

program should be confirmed with the transfer office.

ENVR 107 Soil Mechanics (3-2) 4 Cr. Hrs.

Prerequisites: MATH 113.

This course provides an introduction to soil mechanics and foundations and emphasizes practical applications that are supported by theory. The course concentrates on analytical techniques currently used by the environmental industry to understand the behavior of soils and to classify soils. Soil characteristics are explored by means of laboratory examination and testing techniques. Soils are classified using the US Department of Agriculture Classification System, the Unified Soil Classification System, and the American Association of State Highway and Transportation Officials System. Other topics include the fundamentals of groundwater, sanitary landfills and remediation and soil erosion.

ENVR 206 Environmental Law (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides an introduction to federal environmental laws. Topics include common law, toxic torts, federalism, statutory law, regulatory strategies, private property and takings, public trust and international environmental law. Federal environmental laws include National Environmental Policy Act; Clean Air Act; Clean Water Act; Resource Conservation and Recovery Act; and Comprehensive Environmental Response, Compensation and Liability Act. Regulatory strategies, such as technology based standards, road block statute, harm based standards and pollution trading are examined.

ENVR 230 Energy Resources (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course presents an overview of nonrenewable and renewable energy resources. Energy resources derived from the earth provide the majority of our energy needs. These resources include fossil fuels (petroleum, natural gas and coal) and radioactive ores used to generate nuclear power. Nonrenewable energy resources are finite and may be used up in the future. Extraction of these geologic materials can result in negative environmental impacts if careful management strategies are not employed. Energy needs for our industrial economy may be met using both renewable and alternative energy sources, which include hydro power, solar power, geothermal power, biomass and wind power. Alternative fuels may be used in the transportation sector. Other course topics include energy conservation, air pollution, energy and sustainable development and energy and global climate change.

ENVR 232 Field Experience (0-3) 3 Cr. Hrs.

Prerequisites: Completion of at least three courses in the Environmental Studies Program or the Environmental Science Certificate Program.

The field experience class provides students with an opportunity to apply the skills and knowledge learned in the Environmental Studies Program to off-campus work experience in government, private industry or nonprofit organization. Students can also meet the course requirements by completing a service learning project that incorporates an environmental issue. Class discussions include sources of employment in the environmental profession, job applications and interviews and preparing resumes.

ENVR 235 Geographic Methods Applied to Environmental Problems (3-0) 3 Cr. Hrs.

Prerequisites: GEOG 135 , GEOG 225 , and ENVR 107.

This course is a capstone course for the Environmental Studies Program and applies geographic research methods and geotechnology to solve environmental problems. Development of a project topic, construction of a hypothesis and selection of a research strategy will be accomplished through consultation and faculty-directed study. Synthesis of geotechnology (geographic information systems, global positioning systems, aerial photography and remote sensing) with research methodology is the focus of this course.

ESL 60 Reading and Vocabulary 1 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test.

This course for English-language learners is the first in a guided series of ESL reading and vocabulary skills classes. This course, taught in group and language lab settings, concentrates on reading and vocabulary development to foster adaptation to a new culture for

personal, academic and professional purposes. Students will develop fundamental reading and vocabulary building strategies to build basic comprehension, efficiency and fluency.

ESL 64 Listening and Speaking 1 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test. Students also may be required to complete a speaking skills assessment.

This course for English-language learners is the first in a guided series of ESL listening and speaking skills classes. The content of this course, taught in group and language lab settings, builds listening and speaking skills in personal and social contexts. Students will learn and practice short conversations on personal and daily topics. Students develop vocabulary, grammar and improve fluency.

ESL 67 Grammar and Writing 1 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test.

This course for English-language learners is the first in a guided series of ESL grammar and writing classes. The content of this course, taught in group and language lab settings, focuses on the understanding and use of basic grammatical concepts, in both oral and written forms, including the parts of speech, basic tenses and sentence patterns. Students will be able to develop simple paragraphs demonstrating basic structure and pre-writing techniques.

ESL 70 Reading and Vocabulary 2 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 060.

This course for English-language learners is the second in a guided series of ESL reading and vocabulary skills classes. This course, taught in group and language lab settings, continues to prepare students for reading success through cultural awareness and increasing fluency in English. Students develop additional strategies using the reading process to improve comprehension and fluency. Students expand their word power base through additional guided vocabulary building skills.

ESL 74 Listening and Speaking 2 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 064. Students also may be required to complete a speaking skills assessment.

This course for English-language learners is the second in a guided series of ESL listening and speaking skills classes. The content of this course, taught in group and language lab settings, teaches students to develop fluency and accuracy in speaking through group presentations and spoken interactions with teachers and classmates. They will learn to apply strategies for comprehending and processing short-spoken passages on familiar topics. Students improve their ability to talk about personal and informal topics in social and academic settings.

ESL 77 Grammar and Writing 2 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 067.

This course for English-language learners is the second in a guided series of ESL grammar and writing classes. The content of this course, taught in group and language lab settings, focuses on developing basic English grammar and writing skills. Students will be able to write well developed paragraphs demonstrating the appropriate application of grammar rules.

ESL 78 English for Business Purposes (3-0) 3 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 3.0 in ESL 060, ESL 064 and ESL 067.

This is an elective course for English-language learners which is designed for both pre-work and working ESL students who want to improve their communication in a professional setting. This course will focus on the cultural and professional aspects of American business interaction and help students develop some of the essential skills necessary for success. Using an integrative approach, business vocabulary, grammar and some pronunciation will also be included. Topics include interviewing, participating in a meeting and messaging. Special emphasis is placed on giving professional presentations.

ESL 79 American English Pronunciation (2-1) 3 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum

grade of 3.0 in ESL 064.

This is an elective course for English-language learners to improve speech intelligibility as well as understanding of American English. Students from a variety of language backgrounds will identify individual pronunciation needs, be instructed in the basics of English pronunciation, and be guided from controlled practice into natural communication. This class, taught in group and language lab settings, concentrates on building and improving pronunciation through the communicative approach.

ESL 80 Reading and Vocabulary 3 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 070.

This course for English-language learners is the third in a guided series of ESL reading and vocabulary skills classes. This course, taught in both group and language lab settings, focuses on academic reading and vocabulary development for college success in a new culture. Students will explore and develop higher level strategies to improve reading comprehension and efficiency, academic word power and critical thinking skills.

ESL 84 Listening and Speaking 3 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 074. Students also may be required to complete a speaking skills assessment.

This course for English-language learners is the third in a guided series of ESL listening and speaking skills classes. The content of this course focuses on students' increasing proficiency as they learn to use informal versus academic vocabulary and grammar in appropriate context. They develop a more critical stance toward their own oral interactions and those of their classmates and apply evaluative criteria to individual and group presentations.

ESL 87 Grammar and Writing 3 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 077.

This course for English-language learners is the third in a guided series of ESL grammar and writing classes. In this class, taught in group and language lab settings, students continue to develop their knowledge of appropriate grammatical structures, academic vocabulary, and will begin essay writing.

ESL 110 Reading and Vocabulary 4 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 080.

This course for English-language learners is the fourth in a guided series of ESL reading and vocabulary skills classes. This course, taught in group and language lab settings, prepares students to successfully handle the necessary types of college level reading assignments. Students will refine reading comprehension strategies and second language vocabulary development skills using a variety of authentic materials to critically analyze and evaluate argumentative and expository authentic materials. Students will apply culturally appropriate techniques to selected projects and materials, test-taking tasks and textbooks.

ESL 114 Listening and Speaking 4 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 084. Students also may be required to complete a speaking skills assessment.

This course for English-language learners is the fourth in a guided series of ESL listening and speaking skills classes. The content of this course, taught in group and language lab settings, focuses on communication skills for active participation in academic and social contexts. Students develop listening and speaking skills for classroom presentations and discussions, learn note-taking skills and practice using academic vocabulary and grammar forms appropriately in context.

ESL 117 Grammar and Writing 4 (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 087.

This course for English-language learners is the fourth in a guided series of ESL grammar and writing classes. In this class, taught in group and language lab settings, students will develop academic essays which integrate limited research.

ESL 130 Capstone Course (3-1) 4 Cr. Hrs.

Prerequisites: Placement is determined by test scores on the CPT Accuplacer English as a Second Language Test or a minimum grade of 2.0 in ESL 110, ESL 114 and ESL 118. Students also may be required to complete a speaking skills assessment.

This capstone course for English-language learners will provide ESL students with support as they simultaneously take non-ESL college level classes. As the culmination of ESL studies, this course, taught in group and language lab settings, will reinforce the precise English skills required for college success, including writing with research, specialized vocabulary, reading strategies, pronunciation and test-taking techniques.

FIN 420 Financial Management (3-0) 3 Cr. Hrs.

Prerequisites: BUS 304.

In this course, you will apply financial concepts utilized in analyzing a business operation to improve performance and to facilitate decision making. This course will include: financial management, financial analysis, time value of money techniques, financial markets, debt and equity financing, project and investment evaluation and decision making, capital structure, financial planning and forecasting and business risk. This course will integrate web-based learning tools and spreadsheet applications.

FIRE 112 Fire Fighter 1 - Basic Fire Suppression (6-4) 10 Cr. Hrs.

Prerequisites: Michigan state law mandates that persons taking this course must be at least 18 years of age and have a valid Michigan driver's license.

This course provides an introduction to basic fire suppression, prevention procedures and skill development. FIRE 112 is provided as the first of two courses, which constitute the equivalent of the Basic Fire Academy and is offered for students who prefer to attend on a part-time basis. This course is for students who are currently employed by a Michigan Fire Marshal recognized fire department or currently seeking employment and/or volunteer in a recognized fire district. This course meets the state-mandated requirements for preparing students to take the exam for state certification for entry-level on-call or volunteer fire fighters.

FIRE 119 Fire Fighter 2 - Advanced Fire Suppression (7-3) 10 Cr. Hrs.

Prerequisites: FIRE 112 with a grade of 2.0 or higher. Michigan state law mandates that persons taking this course must be at least 18 years of age and have a valid Michigan driverâ€™s license.

Fire Fighter 2 is the second of two courses which together make up the equivalent of the Basic Fire Academy and is offered for students who prefer to attend on a part-time basis. This course deals with advanced fire suppression techniques, including prevention procedures and skill development. This course is for students who are currently employed by a Michigan Fire Marshal recognized fire department or currently seeking employment and/or volunteer in a recognized fire district. This course meets the state mandated requirements for preparing students to take the exam for state certification for entry-level career fire fighters.

FIRE 124 Fire Academy (13-7) 20 Cr. Hrs.

Prerequisites: Michigan state law mandates that persons taking this course must be at least 18 years of age and have a valid Michigan driverâ€™s license.

The Fire Academy combines FIRE 112 and FIRE 119, providing comprehensive training in fire suppression, prevention procedures and skill development. This course is for students who are currently employed by a Michigan Fire Marshal recognized fire department, are currently seeking employment and/or are a volunteer in a recognized fire district. Students must be able to attend on a full-time basis. This course meets the state-mandated requirements for preparing students who intend to become professional Michigan fire fighters to take the state certification exam for entry-level career fire fighters.

FIRE 125 Building Construction for the Fire Service (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course emphasizes the impact that an understanding of the principles of building construction has on fire fighting strategy. It explains building materials and the processes that are involved in the construction of structures and how they react to fire conditions. It will provide students with the knowledge required to operate safely and effectively within residential or commercial buildings. The course will also discuss actual incidents and case studies containing critical thinking questions that give students a better understanding of what is to be expected in the field.

FIRE 128 Fire Fighting - Hydraulics and Water Supply (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is a study of the principles of fluid in motion. More specifically, it concentrates on water and its use as a fire extinguishing agent. It is a course of solving problems of water delivery application for fire fighting situations, along with the theory that is necessary in finding correct solutions. Studies will include the physical laws of liquids as they apply to water for fire fighting, the characteristics of water and its controlled delivery through highly technical machinery and equipment. It will include a study of the safe and efficient operation of that equipment during training and/or actual fire fighting operations. Students will be required to solve sample problems in writing. They will also be required to complete a brief study of a local water system.

FIRE 130 Fire Fighting - Tactics and Strategy (3-0) 3 Cr. Hrs.

Prerequisites: FIRE 112 or FIRE 124 is recommended.

This course examines new technology, fire fighting techniques and improved equipment as well as provides a guide for fire fighters and fire officers who need methods for handling specific situations. The course also covers general principles of fire fighting, engine company operations, search and rescue, structure fires and fire related emergencies.

FIRE 131 Fire Fighting - Tactics and Strategy (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: FIRE 112 or FIRE 124.

This course examines firefighting tactics and strategies related to various types of fires in diverse locations. Topics include safety concepts, company operations, fire dynamics, types of construction, special fires and fire protection systems. Actions to be taken before and after an incident will be explored.

FIRE 135 Fire Protection Systems (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is designed to provide the student with an understanding of the basic principles involved in the design and operation of existing suppression and detection systems found in most structures. Specific topics of discussion include portable extinguishers, dry chemical systems, extinguishing foams, fire detection systems, smoke detection systems and other related topics.

FIRE 200 Fire and Arson Investigation (4-0) 4 Cr. Hrs.

Prerequisites: FIRE 112 or FIRE 124.

This course is designed to acquaint students with data on fire dynamics, explosions and fire behavior. The course is for students interested in learning fundamentals of collection, preservation and analysis of physical evidence. Also covered as part of the course are new laws and court decisions controlling investigator's access to scene and admission of evidence. This course prepares students for on-scene investigation as well as in-service or promotional exams.

FIRE 205 Fire Department Organization and Administration (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is designed to equip the student with knowledge to effectively tackle challenging management problems and deliver practical solutions for managing today's fire departments. This course provides guidance on leadership skills: motivating and disciplining personnel and accepting cultural diversity and unity. Also covered in this course is managing human resources, the use of computer technology for information management and strategic planning and budgeting.

FIRE 207 Fire Company Officer (3-0) 3 Cr. Hrs.

Prerequisites: FIRE 119 or FIRE 124.

It is essential that Fire Company Officers be well versed in the areas of management, leadership and human relations. This course will examine the skills required to function as a Fire Company Officer. Students will cover both traditional and contemporary methods of supervision, planning, staffing and training. The course objectives will parallel NFPA 1021, Fire Officer Professional Qualifications. Combined with the knowledge of essential fire fighting skills, this course provides students with the competencies required for a first-line fire company officer.

FR 101 Elementary French 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is intended for students with no previous education in French. You will learn basic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. You will also gain an appreciation for the French and Francophone culture.

FR 102 Elementary French 2 (4-0) 4 Cr. Hrs.

Prerequisites: FR 101 with a grade of 2.0 or better or one year of high school French or consent of instructor.

This course is a continuation of FR 101 and continues to review the basic French grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of the French and Francophone culture will be an integral part of the course.

FR 201 Intermediate French 1 (4-0) 4 Cr. Hrs.

Prerequisites: FR 102 with a grade of 2.0 or better or two years of high school French or consent of instructor.

This course is a continuation of FR 102 and continues to cover grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of the French and Francophone culture will be an integral part of the course.

FR 202 Intermediate French 2 (4-0) 4 Cr. Hrs.

Prerequisites: FR 201 with a grade of 2.0 or better or three years of high school French or consent of instructor.

This course is a continuation of FR 201 with a broader emphasis on speaking (present-day spoken French), listening comprehension and reading. Through varied activities, the main focus will be on oral proficiency and communication as the course will be entirely conducted in French. An appreciation of the French and Francophone culture will be an integral part of the course.

GEOG 105 Earth Science for Elementary Teachers (3-2) 4 Cr. Hrs.

Prerequisites: None.

This course introduces earth science topics and integrates pedagogical methods appropriate for elementary school teachers. The course will help prospective teachers create a resource base of knowledge and activities for teaching earth science and develop teaching strategies based on how children learn science. Teaching strategies include inquiry-based strategies and active, cooperative and collaborative learning strategies. The course includes lecture, peer teaching, demonstrations and lesson plan development.

GEOG 133 World Regional Geography (4-0) 4 Cr. Hrs.

Prerequisites: None.

World Regional Geography includes a systematic study of the world's geographic realms, including Europe, United States-Canada, Russia, Middle America, South America, Southwest Asia, Southeast Asia, East Asia, Subsaharan Africa and Australia-New Zealand. Geographic concepts, such as map reading and spatial analysis, are first introduced. Then, the world is classified into geographic realms using both physical and social criteria. Each realm results from a unique interaction between the human societies and the physical and biological environment. The physical, cultural, political and social features of each realm are studied, along with any special regional concerns or problems.

GEOG 135 Earth Systems (3-2) 4 Cr. Hrs.

Prerequisites: None.

Earth Systems is an introductory physical geography lab course. Earth Systems utilizes a systems approach to analyze the earth's dynamic systems: energy, atmosphere, water resources, weather and climate, tectonic processes, landforms, soil, vegetation and ecosystems. Introductory geographic concepts including absolute and relative location, spatial analysis and geographic approach are covered. Fundamentals of map reading, remote sensing and geographic information systems are included.

GEOG 203 Weather and Climate (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides an overview of the earth’s atmospheric system. Topics include energy, temperatures, atmospheric moisture,

cloud formation, precipitation, atmospheric pressure, weather systems, weather forecasting, severe weather and global climate patterns. Discussions include global climate change and air pollution.

GEOG 212 Environmental Science (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is an introductory environmental science course with no prerequisites. The course offers an in-depth examination of a variety of local, regional and global environmental concerns. The course focuses on the effects that human societies have on the physical environment and the global biosphere. Topics include human population distribution, growth rates and population explosion, erosion and contamination of soil resources, degradation of water resources, air pollution, global climate change, waste management, biodiversity and deforestation.

GEOG 217 Water Resources (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a survey of water resources which includes a study of the occurrence, movement, and behavior of water in the hydrologic cycle. Discussions on the ways in which these resources can be contaminated and remediated will be held. The course includes a study of watershed management, which is a holistic, integrated method of managing all water resources located within a naturally occurring watershed. Data and hydrologic studies completed for the Rouge River Watershed provide a model for watershed management. The course offers demonstrations of hydrologic computer models and limited field experience.

GEOG 225 Introduction to Geographic Information Systems - GIS (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course provides an introduction to basic Geographic Information Systems (GIS) concepts through in-class discussions and hands-on assignments using ArcGIS. The course includes theory, mapping techniques, data collection and compilation and data analysis. Topics include implementation of a GIS, current applications, legal issues and the future of GIS.

GEOL 133 Physical Geology (3-3) 4 Cr. Hrs.

Prerequisites: None.

Physical Geology is the study of the geological processes that affect the earth. This includes a survey of what the earth is made of (rocks, minerals, etc.), how it works on the inside (plate tectonics, earthquakes, volcanic eruptions) and the processes that act upon it from the outside (streams, glaciers, wind, etc.). Identification of common rocks and minerals and the interpretation of topographic maps are part of the required laboratory exercises. An all-day Saturday field trip is optional.

GEOL 134 Historical Geology (3-3) 4 Cr. Hrs.

Prerequisites: GEOL 133.

Historical Geology is the study of the geologic development of the earth as a planet from its creation to the present time. The first half of the course is a study of the methods and techniques that the science of geology uses to unravel the history of the earth. The second half applies these techniques to present the geologic history of the continent of North America as a case study.

GEOL 237 Mineralogy (3-2) 4 Cr. Hrs.

Prerequisites: GEOL 133.

Mineralogy teaches the basics of crystal formation, crystal symmetry and crystal chemistry of the most important rock forming and economic minerals of the earth's crust. The course also includes the formation of minerals and mineral occurrences and associations. Laboratory periods concentrate on the methods used in the identification of about 100 minerals.

GER 101 Elementary German 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is intended for students who have no previous education in German. The course will cover basic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of German culture will be an integral part of the course.

GER 102 Elementary German 2 (4-0) 4 Cr. Hrs.

Prerequisites: GER 101 with a grade of 2.0 or better or one year of high school German or consent of instructor.

This course is a continuation of GER 101 and continues to review the basic grammar patterns and builds competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of German culture will be an integral part of the course.

GER 201 Intermediate German 1 (4-0) 4 Cr. Hrs.

Prerequisites: GER 102 with a grade of 2.0 or better or two years of high school German or consent of instructor.

This course is a continuation of GER 102 and continues to cover grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of German culture will be an integral part of the course.

GER 202 Intermediate German 2 (4-0) 4 Cr. Hrs.

Prerequisites: GER 201 with a grade of 2.0 or better or three years of high school German or consent of instructor.

This course is a continuation of GER 201 with a broader emphasis on speaking (present-day spoken German), listening comprehension and reading. Through varied activities, the main focus will be on oral proficiency and communication as the course will be entirely conducted in German. An appreciation of German culture will be an integral part of the course.

HDS 110 Career Decision Making (2-0) 2 Cr. Hrs.

Prerequisites: None.

This course assists students in examining the components of career/job choice. The focus is on career awareness, personal awareness and education/training awareness as they relate to the process of occupational choice. Self-assessment instruments will help identify tentative career options, decision-making strategies, obstacles and planning skills.

HIST 134 Ancient World (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is a survey of prehistoric and ancient times: origins of human nature and culture; early gathering-hunting and planting-herding societies; origins of civilization in the Middle East, India, China, the Mediterranean and elsewhere; civilized-barbarian interaction and the rise of early Old World empires; rise of classical civilizations, especially Greece and Rome; rise of the higher religions, especially the Judaeo-Christian traditions; and decline of classical civilizations with emphasis on the fall of Rome and the rise of medieval Europe, Byzantium and Islam.

HIST 137 Early Modern World (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is a survey of the balance of world civilizations in medieval and early modern times: American and African peripheral regions; major civilizations of Asia and Europe in the Middle Ages; 14th-16th century crisis and renewal; expansion of Europe in the age of Renaissance, Reformation and discovery; rise of the Great Power system; the scientific revolution and Enlightenment; the democratic and industrial revolutions; emergence of modern ideologies and nations; and climax of European expansion in the age of imperialism to the late 19th century.

HIST 138 Contemporary World (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a survey of the main themes in the history of the world in the last hundred years: the Eurocentric world order of 1900; World War I, communist revolution and fascist counter-revolution; the settlements of the 1920s and the renewal of world crisis in the 1930s; World War II and the onset of the Cold War in the 1940s-1960s; erosion and collapse of the postwar order in the 1970s-1980s; and the contemporary world order in historical context.

HIST 141 History of Michigan and the Great Lakes (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a general survey of the historical development of Michigan from the primitive wilderness to the present; growth of

certain political, economic, social and cultural institutions which contribute to understanding Michigan and the Great Lakes area today; and emphasis on relating the history of the state to that of both the area and the nation.

HIST 151 Early America - U.S. History (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a survey of the origins of American civilization: native American societies in pre-Columbian and colonial times; European discovery, exploration, conquest and settlement of the Americas; Iberian, French and African elements in the early Americas; 17th and 18th century English colonial development; the Revolutionary era and the founding of the U.S.; and Federalist and Jeffersonian America to the early 19th century.

HIST 152 19th Century America - U.S. History (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a survey of the expansion, crisis and renewal of the U.S. in the 19th century: demographic, economic, social and cultural change in Jacksonian America; the North and antebellum reform movements; the South and slavery; the West and territorial conquest and settlement; sectional struggle, the Civil War and Reconstruction; and emergence of modern, urban, industrial America to the beginning of the 20th century.

HIST 153 Contemporary America - U.S. History (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a survey of American civilization within the last hundred years: turn-of-the-century growth and crisis; the Progressive Era and World War I; the 1920s, the Great Depression and the New Deal; World War II and the emergence of the U.S. as a superpower; affluence, consensus and confrontation in the 1950s-1960s; malaise, drift and fragmentation in the 1970s-1980s; and the U.S. in the world of the late 20th century.

HIST 230 U.S. Business History - 1865 to Present (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will provide students with an examination of major business and economic development in the U.S. from the Civil War to the present. Emphasis will be placed on the ideas, forces and personalities in the ever-changing role of business and economics and their impact on the nation and its citizens. This course is recommended for students majoring in business, economics and history.

HIT 100 Introduction to Medical Terminology (2-0) 2 Cr. Hrs.

Prerequisites: None.

This course is a basic overview of medical terminology. The students will be introduced to medical terminology used in healthcare. The topics in the course provide activities to allow the student to spell, define and pronounce medical terminology.

HIT 104 Medical Terminology (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course introduces the student to the fundamentals of the language of medicine. Definitions, pronunciations, spelling and abbreviations of anatomic, symptomatic, diagnostic and operative terms pertaining to each anatomical system of the body will be reviewed. Terms pertaining to pharmacology, clinical laboratory, radiology and pathology will also be explored.

HIT 112 Basic Laboratory and Diagnostic Tests (2-0) 2 Cr. Hrs.

Prerequisites: HIT 100 or HIT 104.

This course is designed to prepare an allied health student to identify clinical laboratory and diagnostic tests. The student will develop an understanding of what the laboratory and diagnostic test is used for as it relates to diseases, diagnoses or disorders associated with the test and the normal range or results of the test. Students will complete case studies to demonstrate a working knowledge of laboratory and diagnostic tests.

HIT 114 Pharmacology for Health Professionals (2-0) 2 Cr. Hrs.

Prerequisites: HIT 100 or HIT 104.

This course is designed to provide an overview of principles of pharmacology pertaining to treatment of diseases, physiological processes of the body related to drug therapy, legislation, classification and names of medications. Students will learn about medications through activities using medical documentation and internet resources.

HIT 117 ICD-10-CM/PCS (2-2) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: Corequisite unless previously taken: HIT 118 and HIT 120.

This course provides an introduction to basic ICD-10-CM/PCS coding theory. This course is designed for the classification of patient morbidity and mortality information for statistical purposes, for the indexing of health/medical records by disease and operation for data storage and retrieval and for reimbursement purposes. ICD-10-CM and PCS Official Guidelines for Coding and Reporting for hospital inpatient and outpatient services will be utilized. Laboratory activities focus on the application of the related skills with accuracy and completeness using manual and computerized methods.

HIT 118 Human Diseases (4-0) 4 Cr. Hrs.

Prerequisites: BIOL 236 and HIT 104.
Recommended: CIS 120.

This course includes the study of the pathology and general health management of diseases and injuries across the life span. Topics include the fundamental concepts and processes of human disease such as inflammation, infection, neoplasia, degeneration, aging, congenital and genetic disorders, immune deficiency and autoimmune disorders. Idiopathic, traumatic, stress-related, substance abuse-related and iatrogenic disorders will also be studied. The student will develop an understanding of common diagnostic work-ups including laboratory tests and imaging. The types of treatments for diseases, which may include pharmacology, surgery and other therapies, are also covered.

HIT 120 Foundations of Health Information Management Technology (3-1) 3 Cr. Hrs.

Prerequisites: HIT 104 and CIS 120.

This course provides an introduction to the U.S. healthcare industry and to the health information management profession. Topics include an overview of the evolution of healthcare systems in the U.S. and trends for the future. Health record content, documentation requirements, secondary data sources and the influence of accrediting and regulatory bodies that govern health information will be reviewed. Information processes and relationships among organizational departments and healthcare providers will also be addressed. The educational and certification requirements for health information professionals will be examined. Hands-on laboratory activities will help the student to gain proficiency in basic health information functions. Electronic health record applications will be utilized.

HIT 130 Legal Aspects of Health Information (3-0) 3 Cr. Hrs.

Prerequisites: HIT 120.
Corequisites: Corequisite unless previously taken: ENG 102 or ENG 106.

This course provides the student with an understanding of the American legal system, legal terminology and the requirements concerning the compilation and maintenance of health information. Topics include how health information is used and when it can be disclosed based on state and federal regulations and statutes, including the privacy and security rules resulting from the Health Insurance Portability and Accountability Act (HIPAA). The patient's right to privacy, patient consent and advance directives, retention directions, ethical issues in health care and health information management are also explored.

HIT 158 Clinical Affiliation 1 (0-8) 2 Cr. Hrs.

Prerequisites: ENG 101 with a minimum grade of 2.0. MATH 101 with a minimum grade of 2.0.
Corequisites: Corequisites unless previously taken: HIT 117 and HIT 130.

This course provides the health information student with professional practice experience (PPE)/clinical affiliation under the supervision of a qualified Health Information Management professional. The student will have the opportunity to observe and interact with Health Information Management professionals in a variety of healthcare settings both on-campus and off-campus. Virtual lab activities will be used to enhance the professional practice experience. This course requires a time commitment of eight daytime hours, one day per week, for 15 weeks to meet program professional practice experience guidelines. A special permit and additional course conditions are required to register.

HIT 210 Healthcare Statistics for Health Information Management (2-2) 3 Cr. Hrs.

Prerequisites: HIT 117 and HIT 158.

This course introduces students to terminology, definitions and computational methodology of the basic and most frequently used health statistics. Topics examined include healthcare data collection, report generation, data analysis and interpretation as well as data presentation techniques.

HIT 213 Health Information Technology Seminar (1-0) 1 Cr. Hrs.

Prerequisites: None.
Corequisites: Corequisites if not previously taken: HIT 210 , HIT 224 , HIT 242 , HIT 232 , HIT 234 , HIT 235 and HIT 240.

This course will assist the student in preparation for the Registered Health Information Technician (RHIT) certification examination. The student will develop a study plan to be utilized on an individual and/or group basis. The student will complete a mock certification examination. The student will also begin preparation for a job search. A research of job opportunities that are currently available will be identified. This course should be taken in the last semester of the student's program.

HIT 216 Healthcare Delivery Systems (2-0) 2 Cr. Hrs.

Prerequisites: HIT 111 or HIT 117 and HIT 158.

This course provides for a comprehensive review of the healthcare industry. Trends and changes related to healthcare facilities such as acute care hospitals, specialty hospitals, long-term care facilities, managed care organizations, ambulatory care, behavioral care, hospice and home healthcare are investigated. The course will also deal with the impact and use of technology in the delivery and documentation of healthcare and the role of the health information professional within the healthcare delivery system.

HIT 222 Basic Ambulatory Coding (2-2) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: Corequisite unless previously taken: HIT 118 and HIT 120.

This course is designed to prepare a student to code in the ambulatory setting using Current Procedural Terminology (CPT). Topics include ambulatory reporting requirements for codes and rules that apply to the reimbursement systems used by government payers and other health plans. The student will be introduced to computerized coding systems utilized in healthcare. The emphasis of the course will be coding for facility services and procedures.

HIT 224 Quality Management in Healthcare (2-1) 2 Cr. Hrs.

Prerequisites: HIT 130 and HIT 158.

This course is designed for the student to review methods by which a healthcare organization measures, assesses and improves the quality, safety and effectiveness of healthcare services. Topics explored include traditional quality assessment, performance improvement methodologies, utilization/resource/case management, risk management, infection control, credentialing and the role of oversight agencies. Patient satisfaction as an important and commonly used indicator for measuring the quality in health care will also be covered. Lab activities will include data abstraction and analysis for quality reporting and use of electronic applications.

HIT 231 Ambulatory Coding Practicum (1-1) 2 Cr. Hrs.

Prerequisites: None.
Corequisites: Corequisite unless previously taken: HIT 117 , HIT 234 and HIT 240.

This course will provide practical hands-on experience with Current Procedural Terminology (CPT) coding of health/medical records and case scenarios. The student will apply official coding guidelines to a variety of clinical cases and record types such as ambulatory, emergency, outpatient and physician office and ancillary services. Evaluation and Management (E/M) leveling will be performed. HCPCS Level 2 codes will also be applied. The student will research references in solving coding problems. Manual and computerized systems for procedure and service coding will be reviewed.

HIT 232 Computer Applications in Healthcare (2-0) 2 Cr. Hrs.

Prerequisites: HIT 158.

This course is an introduction to the theory and practical methodology of healthcare information systems. Topics include basics of electronic health records (EHRs) and general healthcare computer systems. Common software applications, system selection and implementation, data quality, storage and retrieval, security and privacy are covered. Health information exchange and new roles in

HIM will also be explored.

HIT 234 Intermediate Ambulatory Coding (2-2) 3 Cr. Hrs.

Prerequisites: HIT 222.

This course includes advanced theory and practice in coding medical/health records in the hospital/ambulatory setting using Current Procedural Terminology (CPT) and Healthcare Financing Administration Common Procedure Coding System (HCPCS). The student will analyze clinical data for the purpose of coding and reimbursement in the ambulatory setting including the physician office. Manual and computerized methods for code assignment will be used.

HIT 235 Intermediate ICD-10-CM/PCS (2-2) 3 Cr. Hrs.

Prerequisites: HIT 117 and HIT 114.

This course is designed to prepare a student to code in the hospital setting using ICD-10-CM/PCS. The course will emphasize reporting requirements for codes and rules that apply to reimbursement systems used by government payers and other health plans. Students will further develop their skills in building codes in the ICD-10 procedure coding system. Students will accurately and ethically assign codes for diagnoses, services and procedures that are documented in the health/medical record. Lab activities will include manual and electronic methods of code assignment.

HIT 236 ICD Coding Practicum (1-1) 2 Cr. Hrs.

Prerequisites: None.
Corequisites: Corequisite unless previously taken: HIT 235 and HIT 240.

This course will provide practical hands-on experience in assigning ICD-10-CM/PCS codes to health/medical records and case scenarios. The student will apply official coding guidelines to a variety of clinical cases and record types such as hospital inpatient, outpatient surgery, physician office and ancillary services. The student will research references in solving coding problems. Manual and computerized systems for diagnosis and procedure coding and DRG grouping will be used.

HIT 240 Healthcare Reimbursement Methodologies (2-0) 2 Cr. Hrs.

Prerequisites: HIT 117 and HIT 222.

The course is designed to provide the student knowledge of the diverse reimbursement methodologies utilized by governmental and private insurance entities in the payment for healthcare delivery services. The course will present third-party payer and compliance/auditing issues, correct coding policy and government prospective payment systems. The terminology and principles for managed care, revenue cycle management and other healthcare plans will be covered.

HIT 242 Organization and Management (3-0) 3 Cr. Hrs.

Prerequisites: HIT 158.
Corequisites: Corequisite unless previously taken: HIT 210 and HIT 224.

Health information professionals make decisions that demand sound planning, organization, motivation and communication skills. Effective supervision of human and other resources is also essential in today's changing world of healthcare. This course provides the health information technology student with basic management concepts and theories that are applied in the Health Information Services/Management environment. Emphasis will be on management of Human Resources and operations, as well as budgeting and operational financial management. The concept of management vs. leadership will be addressed. Project management and team leadership concepts will also be introduced.

HIT 255 Health Information Technology Practicum (0-4) 2 Cr. Hrs.

Prerequisites: HIT 158 , HIT 130 and HIT 117.
Corequisites: Corequisite unless previously taken: HIT 222.

This course emphasizes the application of health information theory and critical thinking skills necessary to perform advanced health information technology functions. Content includes the use of health information technology software applications for patient registration and scheduling, electronic health records (EHR), secondary data sources (i.e. master patient index, registries), release of information and data analysis. Current and emerging health information career opportunities will be explored. Students will create a personal resume to prepare for their job search. Health information technology skills will be performed both virtually and in a laboratory setting.

HIT 256 Clinical Affiliation 2 (0-8) 2 Cr. Hrs.

Prerequisites: HIT 117 , HIT 130 , HIT 158 and HIT 222.

This course provides professional practice experience (PPE)/clinical affiliation for the student under the supervision of health information management professionals. The student will have the opportunity to apply knowledge and skills learned in the classroom to real-world health information functions. Students will utilize technical skills necessary to maintain a health information service, observe employee interactions and interact with health care professionals. Alternative career pathways will also be explored via on-campus or virtual presentations. This course requires a time commitment of eight daytime hours, one day per week for 15 weeks, to meet program professional practice experience guidelines.

HS 101 Introduction to Homeland Security (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is an introduction to the concept of homeland security. The course will define and explain homeland security. The U.S. Department of Homeland Security will be thoroughly analyzed and its mission will be investigated. This course will also address chemical, biological, radiological, nuclear and explosive devices and the use of these weapons of mass destruction. The importance and basic elements of a planned response, methods used to prevent the importation of weapons of mass destruction into the U.S. and what can and is being done to prevent another large-scale terrorist incident in the United States will be covered.

HS 102 Understanding Terrorism (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will introduce students to the phenomena of contemporary terrorism and extremism. Students will see special emphasis on extremism as the foundation for terrorist behavior, types of terrorism and how governments and law enforcement agencies respond to terrorism. The first steps are to understand the mindset, the groups, the aims and the tools terrorists use.

HS 103 Transportation and Border Security (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course addresses concerns associated with border and transportation security to include the potential threats to the passenger and cargo transportation systems. The course will cover the essential characteristics of national and international terrorism, with emphasis placed on significant transportation related terrorist threats and events. Emphasis will also be placed on the importance of technology and the interdependency of local, state, federal and international agencies to protect global trade. Students will be expected to solve problems as an individual and in a coordinated team setting.

HS 201 Organizational and Facility Security (3-0) 3 Cr. Hrs.

Prerequisites: None.

The focus of this course will be on traditional methods of physical security hardware, risk assessments and business continuity. The course will also explore and assess developing security technology and its application to reduce internal and external threats to business.

HS 202 Introduction to Emergency Management (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will provide an overview of emergency management as a career field, discipline and approach to dealing with all-hazards emergency/disaster response. This course will examine major disasters in history and concepts, theory and terminology associated with emergency management.

HS 203 Intelligence Analysis and Security Management (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will provide a study of the U.S. government's intelligence community as well as an overview of intelligence processes. This study will include a historical look at intelligence and some of its milestones. Discussed will be key terms, concepts and perspectives. Students will be exposed to the relationship of intelligence with law enforcement and homeland security and how some intelligence processes may be applied to emergency management and pre-incident planning.

HUM 106 Introduction to Art and Music (1-0) 1 Cr. Hrs.

Prerequisites: None.

This course will cover the basic mechanical and aesthetic elements underlying the visual and aural arts. It will also include an overview of major periods, styles, composers and artists. The course also prepares students to develop an understanding of how to perceive music and art. This course provides an introductory, fundamental, audience-related approach to art and music. Definitions and concepts will be approached in a very basic manner. No prior knowledge or experience in music or arts is necessary.

HUM 150 World Masterpieces (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course serves as an introduction to some of the great works of art and music in the Western world, from Greek civilization to the present. The course will cover the major periods/styles in art and music history: Greek, Roman/Early Christian, Romanesque, Gothic, Renaissance, Baroque, Classical, Romantic, Modern (1900-1945) and Post-Modern (1945-present). Art and music masterpieces to be studied will be selected from the main repertoire of significant works of the Western world. The course will also cover fundamentals of integrative art and music appreciation. A background in art and/or music is not required.

HUM 190 Individual Humanism - An Honors Colloquium (3-0) 3 Cr. Hrs.

Prerequisites: Acceptance to the Schoolcraft Scholars Honors Program.

A required introduction to the Schoolcraft Scholars Honors Program, this colloquium studies the individual and the community through multiple disciplines. Topics of the colloquium may include, but are not limited to, the human condition; individual Renaissance and enlightenment; the role of individuals in a society of change, transition and revolution; the unanswered question; and taking an active role on the social stage. Additionally, students in this course collaborate, practice critical thinking and explore both community issues and community-based organizations.

HUM 201 Art and Music in Western Civilization: Field Study - England (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: Sign up for the international tour.

This course is a humanistic study of music and art in concentrated form through field study. Course includes art forms and functional styles of historical periods as they relate to universal principles. The course will also include studies in English history, culture and geography. The course will conclude with a ten-day trip to London, England with day trips to Cambridge, Canterbury, Bath, Stonehenge, Ely and other satellite locations. The tour will include visits to the National Gallery and the British Museum as well as other museums and will include visits to several palaces, castles, cathedrals and performing arts centers to facilitate a live, first-hand encounter with English arts and culture.

HUM 202 Art and Music in Western Civilization: Field Study - France (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: Sign up for the international tour.

This course is a humanistic study of the arts, culture and history in concentrated form through field study. Course includes art forms and functional styles of historical periods as they relate to universal principles. The course will include studies in French history, culture and geography. The course will conclude with a ten-day trip to Paris, France which will include visits to the Louvre Museum, Musee d'Orsee (and other museums/galleries), Notre Dame Cathedral (and other cathedrals), day trips to Versailles, Giverny, St. Germain, St. Denis and other culturally and historically significant centers to facilitate a live, first-hand encounter with French arts and culture.

HUM 203 Art and Music in Western Civilization: Field Study - Italy (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: Sign up for the international tour.

This course is a humanistic study of the arts, culture and history in concentrated form through field study. Course includes art forms and functional styles of historical periods as they relate to universal principles. The course will include studies in Italian history, culture and geography. The course will conclude with a ten-day trip to Italy which will include visits to Venice, Ravenna, Florence, Assisi, Rome and other culturally and historically significant centers to facilitate a live, first-hand encounter with Italian arts and culture.

HUM 204 Art and Music in Western Civilization: Field Study - Spain (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: Sign up for the international tour.

This course is a humanistic study of the arts, culture and history in concentrated form through field study. Course includes art forms and functional styles of historical periods as they relate to universal principles. The course will include studies in Spanish history, culture and geography. The course will conclude with a ten-day trip to Spain which will include visits to Madrid, Toledo, Segovia, El Escorial and other culturally and historically significant centers to facilitate a live, first-hand encounter with Spanish arts and culture.

HUM 210 The Art of Being Human (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is an interdisciplinary introduction to the humanities as an overall approach to living. The course involves the student in the philosophies, religions and arts as avenues of human inquiry and expression.

HUM 212 Mass Media and Popular Culture (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is an introduction into the nature of mass communication and their relationship with the public. The course will analyze, assess and evaluate popular culture and mass media. Focus will be on the various forms of media to include radio, television, film, newspaper and advertising to determine how they influence and manipulate the ways you relate to yourself and others. Examination will include the history, economics, power and ethical consideration of media outlets.

HUM 215 Humanities through the Arts (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course represents an exploratory approach to the humanities that focuses on the special role of the arts. The relation of the humanities to values is central to the purpose of the course. This approach provides a self-contained program for studying values as revealed in the arts.

ITAL 101 Elementary Italian 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is intended for students who have no previous education in Italian. The course will cover basic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of the Italian culture will be an integral part of the course.

ITAL 102 Elementary Italian 2 (4-0) 4 Cr. Hrs.

Prerequisites: ITAL 101 with grade 2.0 or better or one year of high school Italian or consent of instructor.

This course is a continuation of ITAL 101 and continues to review the basic Italian grammar patterns and to build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of the Italian culture will be an integral part of the course.

LR 135 Strategies for Digital Research: Introduction to Information Literacy (1-0) 1 Cr. Hrs.

Prerequisites: None.

This course provides students with the technical skills needed to locate, access and critically evaluate electronic (digital) information. Additionally, it will teach students information management strategies once they have learned how to access appropriate information sources.

MA 115 Phlebotomy (2-1) 3 Cr. Hrs.

Prerequisites: BIOL 105 or consent of department.

This course teaches basic technical skills necessary for a phlebotomist to draw blood in various healthcare settings such as hospital

labs, doctors' offices and clinics. Proper procedures are stressed for the safe collection and handling of clinical specimens obtained by venipuncture or capillary puncture from adults, children and infants. This course also defines the role of the phlebotomist in the healthcare setting.

MA 134 Medical Insurance Coding (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: HIT 104.

This course introduces the student to insurance coding guidelines developed for use with the International Classification of Diseases, (ICD-10-CM) and Current Procedural Terminology, (CPT). The course is designed to develop basic coding skills to record the services and procedures that are provided for the patient. The importance of accurate coding will be discussed as it is an essential part of reimbursement.

MA 140 Medical Office Procedures (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will focus on the basic concepts in the professional practice of medicine and the role and function of the medical assistant. The course introduces personal and professional characteristics and legal and ethical standards for the medical assistant. Professional and personal communications, time management and workplace dynamics will be studied. This course addresses administrative skills necessary for the medical assistant.

MA 155 Medical Insurance Billing (3-0) 3 Cr. Hrs.

Prerequisites: MA 134 and HIT 104.

This course introduces the student to the various types of medical insurance including Blue Cross/Blue Shield, Medicare, Medicaid, Workers' Compensation and other third-party payers. The student will perform the tasks necessary to process claim forms for each type of medical insurance. Applying the guidelines of CPT, ICD-10 CM and Health Insurance Portability and Accountability Act (HIPAA) must be demonstrated by the student.

MA 160 Phlebotomy Internship (1-1-30) 2 Cr. Hrs.

Prerequisites: HIT 104 , BIOL 105 and MA 110 (3.0 + GPA and completion within the last two months or consent of department).
Corequisites: MA 140 and CIS 105.

The internship will be structured to provide students experience in performing the duties of a Phlebotomist and prepare the student to be eligible to take the certification exam with the National Center for Competency Testing.

MA 175 Medical Laboratory Techniques (2-1) 3 Cr. Hrs.

Prerequisites: BIOL 105 , HIT 104 , MA 140 and MA 115.

This course will provide an opportunity for the student to practice techniques to perform laboratory procedures. The student will practice preparing the patient for tests, collecting samples, completing the tests and reporting the results to the physician. The student will practice laboratory procedures such as urinalysis, hematology, bacteriology, chemistries and patient preps. Note: Students must begin MA 195 within six months of completing MA 175 and MA 180.

MA 180 Medical Office Clinical Procedures (3-3) 4 Cr. Hrs.

Prerequisites: BIOL 105 HIT 104 and MA 140.

This course is designed to introduce the student to all clinical aspects of working in an ambulatory care setting. The following is a short list of what students will learn in this course: examination techniques (including vital signs), medication administration, minor surgery procedures, sterilization procedures, how to perform medical tests, first aid, maintenance of equipment and special dietary needs. Students will spend an additional two hours per week in a lab setting. Note: Students must begin MA 195 within six months of completing MA 175 and MA 180.

MA 195 Office Practicum (1-15) 3 Cr. Hrs.

Prerequisites: Successful completion of all academic and medical assisting courses.

The student will participate in a 180-hour non-paid externship under the direction of a physician and/or the office manager or supervisor. The externship is structured to provide experience in performing administrative and clinical procedures in a physician office, clinic or ambulatory healthcare setting. The student will interact with other healthcare professionals performing and

observing skills of a medical assistant. It is an opportunity that will allow a student to apply theory to practice.

MAS 112 Massage Techniques 1 (3-5) 5.5 Cr. Hrs.

Prerequisites: None.
Corequisites: MAS 113 , MAS 114 , and MAS 115.

This is the introductory course that provides students with a solid foundation in the knowledge and skills necessary to perform massage. Students will learn to apply traditional massage strokes with purpose and effect while using efficient body mechanics. Issues of hygiene, sanitation and self-care will be emphasized throughout.

MAS 113 Comprehensive Study of Human Body Systems 1 (2-2) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: MAS 112 , MAS 114 , and MAS 115.

This is the first of three courses on the human body systems as they relate to the practice of massage therapy. The foundational course presents the principles of anatomy, physiology, kinesiology, pathology and pharmacology. A combination of lecture and lab, students are presented with a decision making model for critical thinking. Students will learn about the integumentary, skeletal, articular, muscular and fascial systems in a theoretical and hands-on manner. Students will also begin the exploration of concepts, terminology and structures of movement.

MAS 114 Clinical Foundations (1-1) 1.5 Cr. Hrs.

Prerequisites: None.
Corequisites: MAS 112 , MAS 113 , and MAS 115.

This is the foundational course for the skills needed to practice massage therapy in the student clinic and a professional clinical setting. Students will discuss and practice client interviewing, health histories and SOAP note charting. Issues of safety, client accommodations and identifying common contraindications will be addressed.

MAS 115 Business and Professional Skills 1 (2-0) 2 Cr. Hrs.

Prerequisites: None.
Corequisites: MAS 112 , MAS 113 , and MAS 114.

This is the first of three courses on the non-technical skills necessary for success in the workplace. The foundational course presents the history of massage, ethical principles and scope of practice. Students will practice communication skills and explore the role of boundaries in a professional setting.

MAS 122 Massage Techniques 2 (2-4) 4 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , and MAS 115.
Corequisites: MAS 123 , MAS 124 , and MAS 125.

In this course, students will learn to provide a smooth and flowing full body therapeutic massage. Adaptations and modifications of massage for diverse client populations will be examined and practiced. Specialty techniques such as myofascial release and reflexology will be used to build upon the primary massage strokes taught in the foundational course.

MAS 123 Comprehensive Study of Human Body Systems 2 (3-2) 4 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , and MAS 115.
Corequisites: MAS 122 , MAS 124 , and MAS 125.

This is the second of three courses on the human body systems as they relate to the practice of massage therapy. It continues with the principles of anatomy, physiology, kinesiology, pathology and pharmacology. A combination of lecture and lab, students are presented with a decision making model for critical thinking. Students will learn about the nervous, cardiovascular and endocrine systems in a theoretical and hands-on manner. Students will also continue the exploration of concepts, terminology and structures of movement.

MAS 124 Student Clinic 1 (0-2) 1 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , and MAS 115.
Corequisites: MAS 122 , MAS 123 , and MAS 125.

Students will experience 30 hours of supervised practice at the Radcliff Campus student clinic. All students will perform practical applications of massage and front desk activities to prepare them for the workplace. Some additional off-site opportunities may be available.

MAS 125 Business and Professional Skills 2 (3-0) 3 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , and MAS 115.
Corequisites: MAS 122 , MAS 123 , and MAS 124.

The second of three courses on the non-technical skills necessary for success in the workplace addresses the ethics of touch, ethical dilemmas and professional relationships. Through discussions and activities students will learn therapeutic relationship dynamics and how to work with awareness, empathy and compassion. Emphasis will be placed upon the ability of students to manage client relationships in a professional manner.

MAS 132 Massage Techniques 3 (2-2) 3 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , MAS 115 , MAS 122 , MAS 123 , MAS 124 , and MAS 125.
Corequisites: MAS 133 , MAS 134 , and MAS 135.

In this course, students will learn to assess soft-tissue tension, restricted range of motion and trigger points. Students will learn a variety of neuromuscular techniques to address these conditions. Applications of techniques for musculoskeletal injuries will be integrated into the role of massage in chronic pain.

MAS 133 Comprehensive Study of Human Body Systems 3 (4-2) 5 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , MAS 115 , MAS 122 , MAS 123 , MAS 124 , and MAS 125.
Corequisites: MAS 132 , MAS 134 , and MAS 135.

This is the third of three courses on the human body systems as they relate to the practice of massage therapy. It continues with the principles of anatomy, physiology, kinesiology, pathology and pharmacology. A combination of lecture and lab, students are presented with a decision making model for critical thinking. Students will learn about the digestive, immune, lymphatic, reproductive, respiratory and urinary systems in a theoretical and hands-on manner. Students will continue the exploration of concepts, terminology and structures of movement. Whole body principles, stages of development, metabolism, nutrition and stress management as they relate to principles of health and wellness will be addressed.

MAS 134 Student Clinic 2 (0-3) 1.5 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , MAS 115 , MAS 122 , MAS 123 , MAS 124 , and MAS 125.
Corequisites: MAS 132 , MAS 133 , and MAS 135.

Students will experience a total of 45 hours of supervised practice using the skills they have learned in pre/co-requisite courses. All students will perform practical applications of massage and front desk activities at the Radcliff Campus student clinic. Some additional off-site opportunities may be available.

MAS 135 Business and Professional Skills 3 (3-0) 3 Cr. Hrs.

Prerequisites: MAS 112 , MAS 113 , MAS 114 , MAS 115 , MAS 122 , MAS 123 , MAS 124 , and MAS 125.
Corequisites: MAS 132 , MAS 133 , and MAS 134.

The third of three courses, this is the capstone course for the non-technical skills necessary for success in the workplace. In this interactive course, students will identify personal and professional goals as well as clarify visions and values for their massage practice. Students will explore career options and concepts as they enhance customer service principles. Students will acquire an understanding of ethical business procedures and employment structures. Research literacy and the impact of scientific research on the massage profession will also be addressed.

MATH 45 Basic Mathematics (4-0) 4 Cr. Hrs.

Prerequisites: Minimum test score of 11 ACT, 15 SAT or 23 CPT (Arithmetic). Competence with addition, subtraction, multiplication and division of whole numbers without the aid of a calculator.

The topics covered in this course include arithmetic with whole numbers, fractions, decimals, percentages and proportions. In

addition, several topics from geometry are included.

MATH 47 Prealgebra (3-0) 3 Cr. Hrs.

Prerequisites: MATH 45 with a minimum grade of 2.0. Competence in arithmetic without the aid of a calculator.

Topics covered in this course include an introduction to variables, integers and algebraic expressions; simplifying algebraic expressions involving integers, fractions and decimals; solving algebraic equations involving integers, fractions, decimals and percents; ratio and proportions; applications using basic concepts from geometry; and introduction to graphing via point-plotting.

MATH 53 Beginning Algebra (4-0) 4 Cr. Hrs.

Prerequisites: MATH 47 with a minimum grade of 2.0.

This course will explore the real number system, fundamental operations with real numbers, graphing, linear equations, factoring polynomials, rational expressions, exponents, quadratic equations, applications and introduction to the function concept.

MATH 55 Plane Geometry (3-0) 3 Cr. Hrs.

Prerequisites: MATH 53 with a minimum grade of 2.0 or minimum placement test score of 19 ACT, 25 SAT or 78 CPT (Elementary Algebra). MATH 113 may be taken concurrently with MATH 055.

This course includes the basic elements of geometry including deductive reasoning, formal proofs and elementary construction with straight edge and compass.

MATH 101 Business Mathematics (3-0) 3 Cr. Hrs.

Prerequisites: MATH 45 with a minimum grade of 2.0 or minimum placement test score of 16 ACT, 22 SAT or 60 CPT (Arithmetic).

This course offers a review of fundamentals of arithmetic along with coverage of percentage, simple and compound interest, taxes, insurance, bonds and their applications to business practice.

MATH 102 Technical Mathematics (4-0) 4 Cr. Hrs.

Prerequisites: MATH 47 with a minimum grade of 2.0.

Technical Mathematics provides the practical mathematics skills needed in a wide variety of occupational programs. Students in this course will address topics including measurement, basic algebra, geometry, right triangle trigonometry, graphing and statistics.

MATH 105 Mathematics for Elementary Teachers 1 (4-0) 4 Cr. Hrs.

Prerequisites: MATH 53 with a minimum grade of 2.5 or minimum placement test score of 19 ACT, 25 SAT or 100 CPT (Elementary Algebra).

This is the first of a two-course sequence designed for students who plan to enter elementary school teaching. The course examines elementary school math topics and mathematics curriculum from an advanced standpoint with an emphasis on conceptual understanding and problem solving. The course covers problem solving, number theory, sets, algebraic concepts and functions, numeration, the real numbers and their properties and operations.

MATH 106 Mathematics for Elementary Teachers 2 (4-0) 4 Cr. Hrs.

Prerequisites: MATH 105 with a minimum grade of 2.0.

This is the second of a two-course sequence designed for students who plan to enter elementary school teaching. The course covers geometry, measurement, statistics and probability.

MATH 111 Applications - Utility of Math (4-0) 4 Cr. Hrs.

Prerequisites: MATH 47 or equivalent with grade of 2.0 or better.

This course is intended for students who do not wish to pursue the study of mathematics by following the standard sequence of courses, but who need to develop some competency in mathematics for an Associate of Arts degree. This course includes the practical application of mathematics. Topics covered in the course include geometry, managing money, interest, installment buying, credit cards, loans, probability, statistics and graphing.

MATH 113 Intermediate Algebra for College Students (4-0) 4 Cr. Hrs.

Prerequisites: MATH 53 with a minimum grade of 2.0 or minimum placement test score of 19 ACT, 25 SAT or 78 CPT (Elementary Algebra).

Review of algebraic operations; problem solving strategies; integer and rational exponents; complex numbers; solving equations; function concept; graphs and applications of linear, quadratic, exponential and logarithmic functions; and systems of equations are the topics covered in this course.

MATH 119 Trigonometry (3-0) 3 Cr. Hrs.

Prerequisites: MATH 55 and MATH 113 both with a minimum grade of 2.0 or minimum placement test score of 23 ACT, 29 SAT or 63 CPT (College-Level Math).

Trigonometric functions and their graphs, identities, equations and inverse functions and solutions of right and oblique triangles are the topics included in this course.

MATH 122 Elementary Statistics (4-0) 4 Cr. Hrs.

Prerequisites: MATH 113 with a minimum grade of 2.0 or minimum placement test score of 23 ACT, 29 SAT or 63 CPT (College-Level Math).

This course includes an introduction to statistics, statistical descriptions, frequency distributions, possibilities and probabilities, probability distributions, sampling and sampling distributions, testing hypotheses based on measurements, count data, paired data and use of nonparametric tests.

MATH 126 College Algebra (4-0) 4 Cr. Hrs.

Prerequisites: MATH 113 with a minimum grade of 2.0 or minimum placement test score of 23 ACT, 29 SAT or 63 CPT (College-Level Math).

The function concept, polynomial, rational, exponential and logarithmic functions, curve sketching, systems of linear equations and inequalities, graphical solutions and business applications are the topics included in this course.

MATH 129 Precalculus (5-0) 5 Cr. Hrs.

Prerequisites: MATH 113 and MATH 119 both with a minimum grade of 2.0 or minimum placement test score of 23 ACT, 29 SAT or 63 CPT (College-Level Math).
Recommended: Engineering, science and math majors should take MATH 129.

Topics covered in this course include the function concept, polynomial, rational, exponential, logarithmic, rapid review of trigonometric and inverse trigonometric functions, solving equations and systems of equations, curve sketching, complex numbers, coordinate geometry and conic sections. The prevailing theme is applications and graphical solutions.

MATH 135 Finite Mathematics (4-0) 4 Cr. Hrs.

Prerequisites: MATH 126 with a minimum grade of 2.0 or a minimum placement test score of 23 ACT, 29 SAT or 103 CPT (College-Level Math).

Matrices and their applications to linear equations and linear programming, the simplex method, elementary probability and mathematics of finance are the topics included in this course.

MATH 145 Calculus for Business and Social Science (4-0) 4 Cr. Hrs.

Prerequisites: MATH 126 with a minimum grade of 2.0 or minimum placement test score of 23 ACT, 29 SAT or 103 CPT (College-Level Math).

The main topics of this course are differentiation of algebraic, exponential and logarithmic functions; curve sketching; optimization; constrained optimization; integration; introduction to functions of several variables; and applications.

MATH 150 Calculus With Analytic Geometry 1 (5-0) 5 Cr. Hrs.

Prerequisites: MATH 129 with a minimum grade of 2.0 or minimum placement test score of 23 ACT, 29 SAT or 103 CPT (College-Level Math).

This course is oriented to engineering, science and mathematics majors. Limits and continuity, derivatives and integrals of algebraic and some trigonometric functions, curve sketching with the aid of the graphing calculator and applications are the topics covered in this course.

MATH 151 Calculus With Analytic Geometry 2 (5-0) 5 Cr. Hrs.

Prerequisites: MATH 150 with a minimum grade of 2.0. MATH 151 may be taken concurrently with MATH 230.

This course includes the study of derivatives and integrals of transcendental functions, techniques of integration, indeterminate forms, improper integrals, infinite series, conics, polar coordinates and applications.

MATH 230 Linear Algebra (4-0) 4 Cr. Hrs.

Prerequisites: MATH 150 with a minimum grade of 2.0.

Topics covered in this course include systems of linear equations, matrices, determinants, Euclidean vector spaces, general vector spaces, inner product spaces, eigenvalues and eigenvectors, diagonalization, linear transformations and applications.

MATH 240 Calculus With Analytic Geometry 3 (5-0) 5 Cr. Hrs.

Prerequisites: MATH 151 with a minimum grade of 2.0.

Vectors in the plane, vectors in three-space, solid analytic geometry, partial derivatives, line integrals, multiple integrals and applications are the topics covered in this course.

MATH 252 Differential Equations (5-0) 5 Cr. Hrs.

Prerequisites: MATH 240 with a minimum grade of 2.0.

Topics covered in this course include first order differential equations, second order linear equations, series solutions of second order linear equations, higher order linear equations, Laplace transform, systems of first order linear equations, numerical methods and qualitative theory of differential equations.

MET 103 Introduction to Materials Science (3-1) 3 Cr. Hrs.

Prerequisites: None.

This course provides a broad introduction to materials science. Using the scientific method, the physical, mechanical and chemical properties of metallic, polymeric, ceramic and composite materials are related to their atomic structure and bonding.

MET 116 Introduction to Physical Metallurgy (3-0) 3 Cr. Hrs.

Prerequisites: CHEM 104. ENG 116 or may be taken concurrently. MATH 102. MET 103.

This course introduces the physical metallurgy of ferrous and non-ferrous metals, the history and production of alloys and fabricated metal products, material selection and failure analysis. It provides the foundation for the subsequent laboratory-based courses.

MET 153 Metallography (1-3) 3 Cr. Hrs.

Prerequisites: CAD 103 or may be taken concurrently. CIS 120 or may be taken concurrently. MET 116 or may be taken concurrently.

This course provides experience in the use of laboratory equipment and methods for studying and reporting microstructures of ferrous, non-ferrous and specialty materials. Proper operation of equipment and instrumentation for sectioning, mounting, polishing, etching, microscopy and image analysis is emphasized, as are safety, etiquette and communication in the laboratory.

MET 160 Composite Materials (2-2) 3 Cr. Hrs.

Prerequisites: MET 103 , ENG 116 and CHEM 104.

This course introduces the various classes, manufacturing methods and applications of composite materials used in industry. The mechanical, physical and chemical properties of reinforced polymer matrix, metal matrix and ceramic matrix composites are explored.

MET 212 Heat Treatment (2-2) 3 Cr. Hrs.

Prerequisites: ENGR 100 or may be taken concurrently. MET 153. MFG 102 or may be taken concurrently. WELD 110 or may be taken concurrently.

This course explores the application of phase diagrams, time-temperature-transformation diagrams, thermal treatments and metallography to predict, control and characterize equilibrium and non-equilibrium structures resulting from thermally activated diffusive and displacive phase transformations.

MET 216 Mechanical Testing (2-2) 3 Cr. Hrs.

Prerequisites: ENGR 100 or may be taken concurrently. MET 153. MFG 102 or may be taken concurrently.

This course applies theories of elasticity and plasticity as well as mechanisms of strengthening and fracture to the mechanical testing of materials by various loading and measurement techniques. In addition, common forming methods are discussed.

MET 248 Electron Microscopy and Image Analysis (2-2) 3 Cr. Hrs.

Prerequisites: MET 153 and BIOL 140 or consent of department.

This course introduces the fundamentals of Scanning Electron Microscopy (SEM) and quantitative Image Analysis (IA) currently used in support of effective materials, characterization and evaluations. Topics covered in the course include microscopy systems and components, applications in fractography and quantifiable measurements used in process and surface failure analysis, materials characterization and product development studies. The course is recommended for students specifically interested in specialized laboratory practices.

MET 272 Corrosion Testing (2-2) 3 Cr. Hrs.

Prerequisites: ENGR 100 or may be taken concurrently. MET 116.

This course introduces basic electrochemistry and the eight forms of corrosion. Laboratory instruction in standard immersion, atmospheric, cabinet and other corrosion test and analysis methods is provided.

MET 281 Special Problems in Materials Science (1-3) 3 Cr. Hrs.

Prerequisites: BIOL 140. MET 212. MET 216.

This course involves the execution of an applied research project involving materials processing and/or analysis. Literature review, hypothesis development, experimental design, experimentation and data analysis culminate in formal written and oral presentations.

MET 290 Metallurgy Internship (1-12/40) 3 Cr. Hrs.

Prerequisites: MET 153 with a minimum grade of 3.0, consent of department and an overall GPA of 2.5.

This is an applied course within Occupational Programs specializing in the field of metallurgy (MET) and is a cooperative assignment for students who have completed the prerequisites for this course. Employment will be approximately 12 to 40 hours per week off-campus at the employer's location within a metallurgy or related department. The final grade will be based on a joint evaluation by the college and the employer. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement. Department permission is required before registering for this course. The selection of eligible students to register for the course is a competitive process that includes testing, submission of a resume with a cover letter and interviews.

MFG 102 Basic Machining Processes (2-4) 3 Cr. Hrs.

Prerequisites: None.

This course will cover fundamental manufacturing processes. The student will be exposed to manual machine operator skills. Particular course emphasis will be on machines, tools and measurements to produce an end product. This is a hands-on class with two-thirds of the time in the manufacturing lab.

MFG 103 Basic Computer Numerical Control (CNC) (2-4) 3 Cr. Hrs.

Prerequisites: MFG 102

Students will be introduced to the operation of the CNC Mill through the use of the basic fundamental of “G” codes and “M” codes. Machine and tool set up will also be covered. As part of the class, students will make several small projects on the CNC machines. These machines are used in today’s industrial manufacturing plants.

MFG 105 Manufacturing Processes (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course will serve as an introduction to a variety of manufacturing processes, such as casting, forming, plastics, machining and joining. It is meant to be an overview and will concentrate on the uniqueness of each process as it applies to materials and production capabilities. In addition, the student will have a brief exposure to the properties of materials as they relate to particular manufacturing processes and the concepts of measurement, inspection and tolerances.

MFG 106 Basic Mastercam (2-2) 3 Cr. Hrs.

Prerequisites: MFG 102 or basic knowledge of machines (mill and lathe).

Students will further their CNC skills by using a CAD/CAM Mastercam software to generate CNC coding for mills and lathes. Using Mastercam involves three steps: First, the student will use Mastercam's CAD program to create the part geometry; secondly, the CAM program will be used to program machine information (feed rate, spindle speed, coolant control command, etc.); and finally, a postprocessor will be used to generate CNC coding. Also, tool paths will be verified by using a graphical (animation) solid-model tool path verification to detect potential machining errors. The students will also study drilling, solid modeling, pocketing and circle boring.

MFG 110 Geometric Dimensioning and Tolerance with Inspection (2-1) 3 Cr. Hrs.

Prerequisites: MFG 102.

The student will learn to interpret blueprints with emphasis placed on Geometric Dimensioning and Tolerance with Inspection. This course will introduce national and international geometric standards of form, profile, orientation, runout and location tolerances used in the manufacturing processes. The student will utilize various instruments to check the accuracy of parts. Curriculum includes emphasis on print reading and measurements.

MFG 203 Advanced Computer Numerical Control (CNC) (2-4) 3 Cr. Hrs.

Prerequisites: MFG 103.

This course will cover CNC machining as well as the advanced functions of the controller. All machine-based operational aspects of the CNC machine used in industrial manufacturing plants will be covered. This course will provide a more advanced machining experience.

MFG 206 Advanced Mastercam (0-4) 3 Cr. Hrs.

Prerequisites: MFG 106 or extensive knowledge in 2D Mastercam Design.

The student will use CNC Mastercam software program. This course will address the following machining variables: machining parameters, constructing wire frame models, generating surface models with tool paths, engraving artworks and solid modeling. Operational parameters will be calculated to determine operating capacity of a cutting tool, spindle horsepower, the affects of different types of work piece material, and rigidity of the part and respective fixture. The student will learn how to generate coding for 3D wire frame and multi-axis composite surfaces using various modeling techniques.

MFG 211 3D Computer Numerical Control (CNC) Machining (0-3) 3 Cr. Hrs.

Prerequisites: MFG 203 and MFG 206.

Students will use the computer to develop the tool path for cut 3D surfaces on CNC machines. This method is used in mold shops in the industrial operation. Students must have a very good understanding of Mastercam and CNC machining.

MFG 290 Manufacturing Internship (1-12/40) 3 Cr. Hrs.

Prerequisites: Minimum of three MFG courses with a minimum average grade of 3.0 and an overall minimum GPA of 2.5 or consent of department.

This is an applied course within Occupational Programs specializing in the field of manufacturing (MFG) and is a cooperative assignment for students who have completed the prerequisites for this course. Employment will be approximately 12 to 40 hours per week off-campus at the employer's location within a manufacturing or related department. The final grade will be based on a joint evaluation by the college and the employer. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement. Department permission is required before registering for this course. The selection of eligible students to register for the course is a competitive process that includes testing, submission of a resume with a cover letter and interviews.

MT 108 Physician Office Transcription (2-0) 2 Cr. Hrs.

Prerequisites: HIT 104 and BIOL 105.

This course is designed to introduce the student to transcription practices utilized in the physician/medical office practice/setting. The importance of accurate transcription will be an essential aspect for this course. Report format and general transcription

guidelines will be explored. The student will gain experience by transcribing office, clinic and hospital dictation from many medical specialties.

MUSIC 104 Basic Materials in Music Theory (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides a step by step approach to the fundamentals of music including notation, scales, intervals and triads.

MUSIC 105 Music Appreciation (3-0) 3 Cr. Hrs.

Prerequisites: None.

An introduction to music, designed especially to increase understanding and enjoyment of music through intelligent listening. No technical knowledge required, but outside listening and attendance at live performances are required.

MUSIC 107 Music for Elementary Teachers (3-2) 4 Cr. Hrs.

Prerequisites: None.

This course will provide students with knowledge about fundamental concepts in music such as rhythm, harmony and form through participation in musical behaviors such as playing instruments, moving and singing. It also will provide opportunities for students to develop and execute lessons that address these concepts as well as employing music to facilitate learning in other academic areas such as math, science and language arts. The course is recommended for elementary education majors.

MUSIC 114 Voice Class 1 Elements - Beginners (2-0) 2 Cr. Hrs.

Prerequisites: None.

This is the first in a series of four voice classes for students interested in developing their vocal skills. This class is designed for young or beginning singers or for singers wishing to refresh their focus on the elements upon which the cultivation of the singing voice is built.

MUSIC 116 Voice Class 2 Cultivation - Intermediate (2-0) 2 Cr. Hrs.

Prerequisites: Consent of instructor.

This is the second in a series of four voice classes for students interested in developing their vocal skills. This is a voice class for singers of intermediate level or for singers wishing to refresh their understanding of the study and cultivation of the singing voice.

MUSIC 117 Choir 1 (2-1) 2 Cr. Hrs.

Prerequisites: Consent of instructor.

This is the first course in which students will explore the principles of choral singing and musicianship. Music of all styles and periods will be included. Choir is an elective for all students, regardless of major field. Additional Choir credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 118, 217, and 218.

MUSIC 118 Choir 2 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 117 or consent of instructor.

This is the second course in which students will explore the principles of choral singing and musicianship. Music of all styles and periods will be included. Choir is an elective for all students, regardless of major field. Additional Choir credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 217 and 218.

MUSIC 121 Class Piano 1 (2-0) 2 Cr. Hrs.

Prerequisites: None.

This is the first class in a two course sequence of group piano instruction designed for students with little or no formal piano training. Instruction is given on both electronic and acoustic instruments.

MUSIC 122 Class Piano 2 (2-0) 2 Cr. Hrs.

Prerequisites: MUSIC 121 or equivalent.

This is the second class in a two course sequence of group piano instruction designed for students with little or no formal piano training. Instruction is given on both electronic and acoustic instruments.

MUSIC 124 Chamber Singers 1 (1-1) 1 Cr. Hrs.

Prerequisites: Consent of instructor.

This is the first course in which students will explore the concepts of singing and musicianship involved in performing choral music composed for chamber ensemble as well as vocal music composed for chamber ensemble. Music of all styles and periods historically appropriate for a choral chamber ensemble will be included. Chamber Singers is an elective for all students, regardless of major field. Additional Chamber Singers credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 127, 224, and 227.

MUSIC 127 Chamber Singers 2 (1-1) 1 Cr. Hrs.

Prerequisites: MUSIC 124 or consent of instructor.

This is the second course in which students will explore the concepts of singing and musicianship involved in performing choral music composed for chamber ensemble as well as vocal music composed for chamber ensemble. Music of all styles and periods historically appropriate for a choral chamber ensemble will be included. Chamber Singers is an elective for all students, regardless of major field. Additional Chamber Singers credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 224 and 227.

MUSIC 131 Applied Music - Piano 1 (1-1) 2 Cr. Hrs.

Prerequisites: None.

This class is for students who have previous experience in piano performance. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 132 Applied Music - Piano 2 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 131.

This class is for students who have previous experience in piano performance. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 133 Applied Music - Voice 1 (1-1) 2 Cr. Hrs.

Prerequisites: None.

Every student studying voice at Schoolcraft College begins with MUSIC 133. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 134 Applied Music - Voice 2 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 133.

This is the second in the sequence of voice classes at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 135 Applied Music - Instrumental 1 (1-1) 2 Cr. Hrs.

Prerequisites: None.

MUSIC 136 Applied Music - Instrumental 2 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 135.

This is the second class in the sequence of courses for students studying instruments of the band and orchestra, including classical guitar, at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required practice

(minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 137 Sight Singing and Ear Training 1 (2-0) 2 Cr. Hrs.

Prerequisites: A basic knowledge of scales, key signatures, intervals and triads.

This course will focus on sight singing melodies. The course will also include simple rhythmic, melodic and harmonic dictations. There will be exploration of intervals; tonic and dominant chords in root position, first and second inversion; and non-harmonic tones.

MUSIC 138 Sight Singing and Ear Training 2 (2-0) 2 Cr. Hrs.

Prerequisites: MUSIC 137.

This is the second course in the Sight Singing and Ear Training sequence. It will cover sight singing melodies, outlining intervals of all triads and dominant seventh chords. In addition, harmonic, melodic, rhythmic dictation, altered non-harmonic tones, secondary dominants, modulation to closely related keys and borrowed altered harmonies will be explored.

MUSIC 140 Jazz Lab Band - Improvisation 1 (2-1) 2 Cr. Hrs.

Prerequisites: Consent of instructor.

This group is geared to the less experienced jazz player interested in performing contemporary jazz music in the big band setting, but with some emphasis on improvisation. The Lab Band will perform at concerts during the school year. The class is open to all students, high school and college, and members of the community. An audition at the beginning of each semester is required.

MUSIC 141 Wind Ensemble 1 (2-1) 2 Cr. Hrs.

Prerequisites: Consent of instructor.

The Schoolcraft Wind Ensemble is open to all brass, woodwind and percussion instrumentalists regardless of major field. The ensemble performs several concerts during the semester as well as at all college commencements. Additional Wind Ensemble credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 241, 245, and 246.

MUSIC 142 Jazz Band 1 (2-1) 2 Cr. Hrs.

Prerequisites: Consent of instructor.

The Schoolcraft Jazz Band is open to all aspiring jazz performers regardless of major field. The ensemble studies literature from the big band era up through modern jazz arrangements and performs several concerts during the semester. Additional Jazz Band credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 242, 248, and 249.

MUSIC 143 Practice Teaching and Practicum in Piano Teaching 1 (1-1) 2 Cr. Hrs.

Prerequisites: Consent of Department.

Piano teachers will learn to create and present effective lesson plans. Topics include repertoire, theory concepts, rhythm, tone, touch and hand position for beginning piano study. Students will have the opportunity to observe other teachers as well as beginning piano students in the Schoolcraft Piano Academy and in the community.

MUSIC 144 Practice Teaching and Practicum in Piano Teaching 2 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 143.

Piano teachers will learn to create and present effective lesson plans. Topics include repertoire, theory concepts, rhythm, tone, touch and hand position through the second semester of piano study. Students will have the opportunity to observe other teachers as well as early intermediate piano students in the Schoolcraft Piano Academy and in the community.

MUSIC 149 Popular Music Culture in America (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course serves as an introduction to some of the great works of popular music in the United States, from the songs of colonial

America to the present. The course will cover the major periods/styles in popular American music history including but not limited to music of the Westward movement, ragtime and blues, the roots and growth of jazz, country music, folk music, music of Broadway and Tin Pan Alley, the roots and development of rock music and late 20th century developments in popular music, as well as historical, political and sociological background of the United States as pertinent to music history. A background in music is not required.

MUSIC 153 Music Theory 1 (3-0) 3 Cr. Hrs.

Prerequisites: A basic knowledge of scales, key signatures, intervals and triads.

Harmonic progression; chords of root position, first inversion and second inversion will be examined in this course. Phrase structure and cadences will be introduced. Technique of harmonization and non-harmonic tones will be explored.

MUSIC 154 Music Theory 2 (3-0) 3 Cr. Hrs.

Prerequisites: MUSIC 153.

This is the second course in the Music Theory sequence. Students will be introduced to chord progressions, harmonization, nondominant seventh chords, altered non-harmonic tones, secondary dominants and modulation to closely-related keys. Students will also explore music notation software. Students will create an original composition.

MUSIC 155 History of Broadway (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will look at the history and development of the Broadway musical, from its roots in early American musical entertainment and classical European opera, its heyday in the post-modern era and its evolution in the late 20th century as a result of the music publishing and recording industry. In addition, the course will take an in-depth look at the music and structure of several Broadway masterpieces and how they affected and were affected by American popular culture.

MUSIC 164 Music History 1 - 17th and 18th Centuries (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides a detailed survey of literature, history and musical materials of the Baroque and Classical eras. The functions and characteristics of music in the 17th and 18th centuries will be explored. Composers, musical compositions and musical performances of this era will be examined.

MUSIC 165 Music History 2 - 19th and 20th Centuries (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides a detailed survey of history and literature of music of the Romantic and 20th century eras. The functions and characteristics of music in the 19th and 20th centuries will be explored. Composers, musical compositions and musical performances of this era will be examined.

MUSIC 168 Synthesizer Ensemble 1 (2-1) 3 Cr. Hrs.

Prerequisites: MUSIC 121 or consent of instructor.

The Schoolcraft Synthesizer Ensemble is open to all musicians with keyboard skills, regardless of major field. The ensemble performs original music and transcribed literature of many genres on electronic musical instruments. The group performs several concerts during the semester. Additional Synthesizer credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 169, 268 and 269.

MUSIC 169 Synthesizer Ensemble 2 (2-1) 3 Cr. Hrs.

Prerequisites: MUSIC 168 or consent of instructor.

This is the second Schoolcraft Synthesizer Ensemble course which is open to all musicians with keyboard skills, regardless of major field. The ensemble performs original music and transcribed literature of many genres on electronic musical instruments. The group performs several concerts during the semester. Additional Synthesizer credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 268 and 269.

MUSIC 171 Music Technology 1 (3-0) 3 Cr. Hrs.

Prerequisites: MUSIC 121 MUSIC 104 and or equivalent.

This course is an introduction to the fundamentals of music-making using computer hardware and software. The course will examine

the basic functions of digital audio workstation (DAW) software as well as hardware and software synthesizers through hands-on experience and experimentation. The course will also introduce the student to current software applications that emphasize music performance and composition with the assistance of MIDI hardware and a desktop computer.

MUSIC 172 Music Technology 2 (3-0) 3 Cr. Hrs.

Prerequisites: MUSIC 171.

This course will deal with advanced functions of Digital Audio Workstation (DAW) software and synthesis with the assistance of MIDI hardware and a desktop computer.

MUSIC 201 Keyboard Skills for Piano Teachers 1 (2-0) 2 Cr. Hrs.

Prerequisites: Consent of Department.

This is the first course in the Keyboard Skills for Piano Teachers sequence. It is designed to give piano teachers the necessary keyboard skills for teaching beginning through early intermediate level students. The course will cover technical exercises, harmonization, transposition and sight-reading material using the standards of the Michigan Music Teachers Association, the National Piano Guild, the Royal Conservatory of Music (Canada) and other recognized testing organizations.

MUSIC 202 Keyboard Skills for Piano Teachers 2 (2-0) 2 Cr. Hrs.

Prerequisites: MUSIC 201.

This is the second course in the Keyboard Skills for Piano Teachers sequence. It is designed to give piano teachers the necessary keyboard skills for teaching intermediate through late intermediate level students. The course will cover technical exercises, harmonization, transposition and sight-reading material using the standards of the Michigan Music Teachers Association, the National Piano Guild, the Royal Conservatory of Music (Canada) and other recognized testing organizations.

MUSIC 204 Keyboard Skills for Piano Teachers 3 (2-0) 2 Cr. Hrs.

Prerequisites: MUSIC 202.

This is the third course in the Keyboard Skills for Piano Teachers sequence. It is designed to give piano teachers the necessary keyboard skills for teaching late intermediate through early advanced level students. The course will cover technical exercises, harmonization, transposition and sight-reading material using the standards of the Michigan Music Teachers Association, the National Piano Guild, the Royal Conservatory of Music (Canada) and other recognized testing organizations.

MUSIC 205 Keyboard Skills for Piano Teachers 4 (2-0) 2 Cr. Hrs.

Prerequisites: MUSIC 204.

This is the fourth course in the Keyboard Skills for Piano Teachers sequence. It is designed to give piano teachers the necessary keyboard skills for teaching advanced level students. The course will cover technical exercises, harmonization, transposition and sight-reading material using the standards of the Michigan Music Teachers Association, the National Piano Guild, the Royal Conservatory of Music (Canada) and other recognized testing organizations.

MUSIC 214 Voice Class 3 Performance - Advanced (2-0) 2 Cr. Hrs.

Prerequisites: Consent of instructor.

This is the third in a series of four voice classes for students interested in developing their vocal skills. It is a voice class for singers preparing for a career in singing or for advanced singers wishing to learn the art of performance before an audience.

MUSIC 216 Voice Class 4 Performance - Advanced (2-0) 2 Cr. Hrs.

Prerequisites: Consent of instructor.

This is the final course in a series of four voice classes for students interested in developing their vocal skills. This is a voice class for singers preparing for a career in singing or for advanced singers wishing to learn the art of performance before an audience.

MUSIC 217 Choir 3 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 118 or consent of instructor.

This is the third course in which students will explore the principles of choral singing and musicianship. Music of all styles and periods will be included. Choir is an elective for all students, regardless of major field. Additional Choir credits may be earned in a future semester by enrolling in MUSIC 218.

MUSIC 218 Choir 4 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 217 or consent of instructor.

This is the fourth and last course in which students will explore the principles of choral singing and musicianship. Music of all styles and periods will be included. Choir is an elective for all students, regardless of major field.

MUSIC 224 Chamber Singers 3 (1-1) 1 Cr. Hrs.

Prerequisites: MUSIC 127 or consent of instructor.

This is the third course in which students will explore the concepts of singing and musicianship involved in performing choral music composed for chamber ensemble as well as vocal music composed for chamber ensemble. Music of all styles and periods historically appropriate for a choral chamber ensemble will be included. Chamber Singers is an elective for all students, regardless of major field. Additional Chamber Singers credits may be earned in future semesters by enrolling in the following course: MUSIC 227.

MUSIC 227 Chamber Singers 4 (1-1) 1 Cr. Hrs.

Prerequisites: MUSIC 224 or consent of instructor.

This is the last course in which students will explore the principles of singing and musicianship involved in performing choral music composed for chamber ensemble as well as vocal music composed for chamber ensemble. Music of all styles and periods historically appropriate for a choral chamber ensemble will be included. Chamber Singers is an elective for all students, regardless of major field.

MUSIC 231 Applied Music - Piano 3 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 132.

This class is for students who have previous experience in piano performance. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 232 Applied Music - Piano 4 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 231.

This class is for students who have previous experience in piano performance. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 233 Applied Music - Voice 3 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 134.

This is the third in the sequence of voice classes at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 234 Applied Music - Voice 4 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 233.

This is the fourth in the sequence of voice classes at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 235 Applied Music - Instrumental 3 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 136.

This is the third class in the sequence of courses for students studying instruments of the band and orchestra, including classical guitar, at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students

will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 236 Applied Music - Instrumental 4 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 235.

This is the fourth class in the sequence of courses for students studying instruments of the band and orchestra, including classical guitar, at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 240 Jazz Lab Band - Improvisation 2 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 140 or consent of instructor.

This group is geared to the less experienced jazz player interested in performing contemporary jazz music in the big band setting, but with some emphasis on improvisation. The Lab Band will perform at concerts during the school year. This is the second course in a series and the class is open to all students, high school and college, and members of the community. An audition at the beginning of each semester is required.

MUSIC 241 Wind Ensemble 2 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 141 or consent of instructor.

This is the second Schoolcraft Wind Ensemble course which is open to all brass, woodwind and percussion instrumentalists regardless of major field. The ensemble performs several concerts during the semester as well as at all college commencements. Additional Wind Ensemble credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 245 and 246.

MUSIC 242 Jazz Band 2 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 142 or consent of instructor.

This is the second Schoolcraft Jazz Band course which is open to all aspiring jazz performers regardless of major field. The ensemble studies literature from the big band era up through modern jazz arrangements and performs several concerts during the semester. Additional Jazz Band credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 248 and 249.

MUSIC 243 Practice Teaching and Practicum in Piano Teaching 3 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 144.

Piano teachers will learn to create and present effective lesson plans that include repertoire, theory concepts, rhythm, tone, touch and hand position through the third semester of piano study. Students will have the opportunity to observe other teachers and students, as well as to teach late intermediate to early advanced piano students in the Schoolcraft Piano Academy and in the community.

MUSIC 244 Practice Teaching and Practicum in Piano Teaching 4 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 243.

Piano teachers will learn to create and present effective lesson plans that include repertoire, theory concepts, rhythm, tone, touch and hand position through the fourth semester of piano study. Students will have the opportunity to observe other teachers and students, as well as to teach advanced piano students in the Schoolcraft Piano Academy and in the community.

MUSIC 245 Wind Ensemble 3 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 241 or consent of instructor.

This is the third Schoolcraft Wind Ensemble course which is open to all brass, woodwind and percussion instrumentalists regardless of major field. The ensemble performs several concerts during the semester as well as at all college commencements. Additional Wind Ensemble credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 246.

MUSIC 246 Wind Ensemble 4 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 245 or consent of instructor.

This is the fourth Schoolcraft Wind Ensemble course which is open to all brass, woodwind and percussion instrumentalists regardless of major field. The ensemble performs several concerts during the semester as well as at all college commencements.

MUSIC 247 Piano Teaching Techniques and Materials 1 (3-0) 3 Cr. Hrs.

Prerequisites: Consent of Department.

This course explores the relationship between childhood development and beginning piano study. The content and structure of a beginning piano student's preparation will be examined. This introductory level course emphasizes techniques and methods for teaching the beginning piano student, including the following topics: developing a professional piano studio, setting up a small business, understanding laws and ethics of music teaching, elementary methods and materials, repertoire, supplemental materials and functional skills, and knowledge of professional organizations.

MUSIC 248 Jazz Band 3 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 242 or consent of instructor.

This is the third Schoolcraft Jazz Band course which is open to all aspiring jazz performers regardless of major field. The ensemble studies literature from the big band era up through modern jazz arrangements and performs several concerts during the semester. Additional Jazz Band credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 249.

MUSIC 249 Jazz Band 4 (2-1) 2 Cr. Hrs.

Prerequisites: MUSIC 248 or consent of instructor.

This is the fourth Schoolcraft Jazz Band course which is open to all aspiring jazz performers regardless of major field. The ensemble studies literature from the big band era up through modern jazz arrangements and performs several concerts during the semester.

MUSIC 250 Music Theory 3 (3-0) 3 Cr. Hrs.

Prerequisites: MUSIC 154.

This is the third course in the Music Theory sequence. Students will be introduced to borrowed chords, augmented and Neapolitan sixth chords, diminished seventh chords, chromatic mediants and modulation to foreign keys. Students will also analyze 18th- and 19th-century compositions.

MUSIC 252 Music Theory 4 (4-0) 4 Cr. Hrs.

Prerequisites: MUSIC 250.

This is the last course in the Music Theory sequence. Students will be introduced to 18th century counterpoint: the study, analysis and composition of two-voice invention and three-voice fugue. The student will also be introduced to 20th century forms and harmonic tendencies: study, analysis and composition of work utilizing the 12-tone system will be among the techniques explored.

MUSIC 253 Practice Teaching and Practicum in Piano Teaching 5 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 244.

Piano teachers will learn to create and present effective lesson plans that include repertoire, theory concepts, rhythm, tone, touch and hand position through the fifth semester of piano study.

MUSIC 256 Practice Teaching and Practicum in Piano Teaching 6 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 253.

Piano teachers will learn to create and present effective lesson plans that include repertoire, theory concepts, rhythm, tone, touch and hand position through the sixth semester of piano study.

MUSIC 257 Piano Teaching Techniques and Materials 2 (3-0) 3 Cr. Hrs.

Prerequisites: MUSIC 247 or consent of department.

This course explores the relationship between development and intermediate piano study. The content and structure of an intermediate piano student's preparation will be examined. This is the second course in a series and emphasizes techniques and methods for the intermediate piano student, including the following topics: intermediate methods and materials, repertoire, supplemental and functional skills, and the knowledge of professional organizations.

MUSIC 263 Practice Teaching and Practicum in Piano Teaching 7 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 256.

Piano teachers will learn to create and present effective lesson plans that include repertoire, theory concepts, rhythm, tone, touch and hand position through the seventh semester of piano study.

MUSIC 264 Practice Teaching and Practicum in Piano Teaching 8 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 263.

Piano teachers will learn to create and present effective lesson plans that include repertoire, theory concepts, rhythm, tone, touch and hand position through the eighth semester of piano study.

MUSIC 268 Synthesizer Ensemble 3 (2-1) 3 Cr. Hrs.

Prerequisites: MUSIC 169 or consent of instructor.

This is the third Schoolcraft Synthesizer Ensemble course which is open to all musicians with keyboard skills, regardless of major field. The ensemble performs original music and transcribed literature of many genres on electronic musical instruments. The group performs several concerts during the semester. Additional Synthesizer credits may be earned in future semesters by enrolling in the following course sequence (one course per semester): MUSIC 269.

MUSIC 269 Synthesizer Ensemble 4 (2-1) 3 Cr. Hrs.

Prerequisites: MUSIC 268 or consent of instructor.

This is the fourth Schoolcraft Synthesizer Ensemble class which is open to all musicians with keyboard skills, regardless of major field. The ensemble performs original music and transcribed literature of many genres on electronic musical instruments. The group performs several concerts during the semester.

MUSIC 277 Piano Teaching Techniques and Materials 3 (3-0) 3 Cr. Hrs.

Prerequisites: MUSIC 257 or consent of department.

This course explores the relationship between childhood development, late intermediate, and early advanced piano study. The content and structure of an intermediate to advance piano student's preparation will be examined. This is the third course in the series and emphasizes techniques and methods for teaching the intermediate and early advanced piano student, including the following topics: advanced methods and materials, repertoire, supplemental materials and functional skills, and knowledge of professional organizations.

MUSIC 282 Applied Music - Piano 5 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 232.

This is the fifth course in the sequence of piano classes offered at Schoolcraft College. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 283 Applied Music - Piano 6 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 282.

This is the sixth course in the sequence of piano classes offered at Schoolcraft College. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 284 Applied Music - Piano 7 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 283.

This is the seventh course in the sequence of piano classes offered at Schoolcraft College. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum.

Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 285 Applied Music - Piano 8 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 284.

This is the eighth course in the sequence of piano classes offered at Schoolcraft College. This course includes one 45-minute private lesson weekly, a two-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 286 Applied Music - Voice 5 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 234.

This is the fifth in the sequence of voice classes at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 287 Applied Music - Voice 6 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 286.

This is the sixth in the sequence of voice classes at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 288 Applied Music - Voice 7 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 287.

This is the seventh in the sequence of voice classes at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 289 Applied Music - Voice 8 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 288.

This is the eighth in the sequence of voice classes at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required daily practice as assigned by the instructor. Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 290 Applied Music - Instrumental 5 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 236.

This is the fifth class in the sequence of courses for students studying instruments of the band and orchestra, including classical guitar, at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 291 Applied Music - Instrumental 6 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 290.

This is the sixth class in the sequence of courses for students studying instruments of the band and orchestra, including classical guitar, at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students

will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 292 Applied Music - Instrumental 7 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 291.

This is the seventh class in the sequence of courses for students studying instruments of the band and orchestra, including classical guitar, at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 293 Applied Music - Instrumental 8 (1-1) 2 Cr. Hrs.

Prerequisites: MUSIC 292.

This is the eighth class in the sequence of courses for students studying instruments of the band and orchestra, including classical guitar, at Schoolcraft College. This course includes one weekly private lesson, a one-hour weekly studio class and required practice (minimum of six hours for non-majors and varies according to specific major and transfer requirements for music majors). Students will be advised about appropriate daily practice time requirements, repertoire, skills, (for music majors) transfer requirements and required courses related to music curriculum. Performance examinations will be held at the end of each semester. This course is for music and non-music majors.

MUSIC 298 Special Music Projects for Honors Studies - Performance/Composition/Research (2-0) 2 Cr. Hrs.

Prerequisites: A minimum of 45 credit hours completed toward a Music AFA degree or consent of department.

This course provides an opportunity for the talented student to explore individually, in depth, under the direction of a faculty member, a performance, composition or research related project. This course provides an opportunity to present traditional musical events such as a recital or a concert or to learn a new technology. Topics and structure will vary based on the individual student's skills and goals.

MUSIC 299 Special Music Projects for Honors Studies - Performance/Composition/Research (2-0) 2 Cr. Hrs.

Prerequisites: A minimum of 45 credit hours completed toward a Music AFA degree or consent of department.

This course provides an opportunity for the talented student to explore individually, in depth, under the direction of a faculty member, a performance, composition or research related project. This course provides an opportunity to present traditional musical events such as a recital or a concert or to learn a new technology.

NATP 110 Nursing Assistant Preparation (3-7) 10 Cr. Hrs.

Prerequisites: The Nursing Assistant Preparation course is open only to students who are officially admitted to the Nursing Assistant Training Program.

This course is designed to prepare an individual in the role of the nursing assistant. Students will explore communication and interpersonal skills, infection control, safety/emergency procedures, promotion of resident’s independence/rights, basic nursing skills, personal and restorative care skills, care of mental health and social services needs, care of cognitively impaired residents and documentation. Basic nursing assistant skills will be performed in laboratory and geriatric-focused clinical facilities.

NFS 320 Evolution of Dietary Needs throughout the Lifecycle (3-0) 3 Cr. Hrs.

Prerequisites: CHEM 100. CHEM 104 or CHEM 111. BIOL 115 or CUL 241.

Students will learn to examine the nutritional requirements for each phase of the lifecycle. This will include nutritional needs, appropriate food group balance, portion sizes, difference in nutritional requirements by gender, appropriate supplements, illnesses related to nutritional deficiencies and the development of menu plans.

NFS 360 Ensuring a Sustainable Food Supply (3-0) 3 Cr. Hrs.

Prerequisites: ENG 102.

Recommended: BIOL 101.

This course examines the plan of action necessary to ensure a sustainable worldwide food supply. Topics include sustainable agriculture, organic farming, genetically modified organisms, the Farm Bill and hydroponic gardening. In addition, related restaurant initiatives such as buying locally, organic recycling and Green Certification are explored. Off-site educational opportunities may be included in this course.

NFS 440 Exploring Specialized Diets (3-1) 3 Cr. Hrs.

Prerequisites: BIOL 105 and CHEM 100. BIOL 115 or CUL 241. CHEM 104 or CHEM 111.

This course evaluates a variety of specialized diets. This course will prepare students to select and recommend foods according to established science-based nutrition guidelines. Medical nutrition therapy concepts will relate both normal nutrition and modifying menus for nutrition therapy for treatment of disorders and disease. The process of digestion, body systems, health conditions and diet planning will be highlighted. Food allergies and alternative therapies will be discussed.

NFS 480 Clinical Nutrition (3-1) 3 Cr. Hrs.

Prerequisites: BIOL 105 , CHEM 100 , ENG 102. BIOL 115 or CUL 241. CHEM 104 or CHEM 111.

This course prepares students to act as a dietary manager as part of the nutrition care team. This course reviews the nutrition care process, highlighting necessary skills to select and recommend foods based on institutional guidelines, using appropriate tools to assess nutritional adequacy and planning menus based on needs of clients or populations. Topics include nutrition education, documenting in the health record and providing feedback and evaluation to the healthcare team.

NFS 490 Clinical Nutrition Internship (2-10) 2 Cr. Hrs.

Prerequisites: NFS 440 and NFS 480. Departmental approval.

This internship course gives students the opportunity to apply skills learned in Clinical Nutrition and Exploring Specialized Diets. Students will intern a minimum of 50 hours with a registered dietitian. They will have the opportunity to assess and document nutrition-related information, implement physician's dietary orders and review the effectiveness of the nutrition plan. In addition, students will work within a larger group of medical professionals to develop skills in communicating appropriate client information.

NFS 495 Culinary and Dietary Operations Capstone (1-0) 1 Cr. Hrs.

Prerequisites: ACCT 330 , BUS 220 , CUL 350 , CUL 360 , NFS 320 , NFS 440 and NFS 480.

This capstone course allows students to develop diet plans and menus based on their understanding of human physiology and the dietary needs and restrictions of consumers. These diet plans and menus will present evidence of the student’s ability to analyze financial and physical resources; demonstrate leadership, quantitative, technology and communication skills; and recommend proper safety methods. Successful completion of this course will exhibit the student’s proficiency in optimizing operational activities within a culinary establishment while developing appropriate diet plans and menus using available resources.

NURS 104 Pharmacology for Nurses (3-0) 3 Cr. Hrs.

Prerequisites: Acceptance into the Nursing Career Ladder Curriculum for the forthcoming or current year.

This course introduces pharmacological concepts and major drug classifications. Drug information includes mechanism of action, drug effects, therapeutic uses, side effects, adverse effects, toxicity, drug interactions, medication calculations and dosage, example drugs and patient teaching for specified drug classifications. The nursing process and evidence-based principles of nursing within the practical and registered nurse scope of practice are utilized as a framework for safe medication administration as a member of the interdisciplinary healthcare team.

NURS 105 Foundations in Nursing Practice 1 (2.5-4.5) 4 Cr. Hrs.

Prerequisites: Acceptance into the Nursing Career Ladder Curriculum for the current year.

This course provides an introduction to the theory and practice of nursing. It emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in providing basic care for chronically ill and elderly clients within the practical and registered nurse scope of practice. Theoretical content focuses on fundamental nursing concepts and skills with practice in laboratory settings.

NURS 106 Foundations in Nursing Practice 2 (2.5-6) 4.5 Cr. Hrs.

Prerequisites: NURS 105.

This course provides a continuation to Foundations of Nursing Practice 1. It emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in providing basic care for chronically ill and elderly clients within the practical and registered nurse scope of practice. Theoretical content focuses on fundamental nursing concepts and skills. Clinical experiences occur in laboratory, clinical and community settings utilizing an interdisciplinary collaborative approach.

NURS 107 Medical-Surgical Nursing (2.5-6) 4.5 Cr. Hrs.

Prerequisites: NURS 104 and NURS 106.

This course emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in caring for adult clients experiencing medical surgical alterations within the practical and registered nurse scope of practice. Theoretical content focuses on cardiovascular, renal, endocrine and immune system alterations as well as fluid/electrolyte and acid base balance. Clinical experiences are provided in acute and community settings utilizing an interdisciplinary collaborative approach.

NURS 108 Surgical-Medical Nursing (2.5-6) 4.5 Cr. Hrs.

Prerequisites: NURS 104 and NURS 106.

This course emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in caring for adult clients experiencing surgical medical alterations within the practical and registered nurse scope of practice. Theoretical content focuses on musculoskeletal, neurological, respiratory, gastrointestinal and immune system alterations as well as peri-operative care. Clinical experiences are provided in acute and community settings utilizing an interdisciplinary collaborative approach.

NURS 128 Maternal-Child Nursing 1 (2.5-7.5) 5 Cr. Hrs.

Prerequisites: NURS 104 and NURS 106.

This course emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in caring for the childbearing family and pediatric clients. Theoretical content focuses on human sexuality, normal pregnancy, labor, delivery, post-partum, normal newborn, growth and development and common uncomplicated pediatric health disorders within the practical and registered nurse scope of practice. Clinical experiences with the childbearing family and pediatric clients are provided in acute and community settings utilizing an interdisciplinary collaborative approach.

NURS 139 Advanced Concepts in Practical Nursing (1.5-4.5) 3 Cr. Hrs.

Prerequisites: NURS 107 , NURS 108 , NURS 128 and PSYCH 201.

This capstone course emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing to care for groups of clients within the practical nurse scope of practice. Theoretical content focuses on advanced-medical surgical topics as well as issues related to licensure and employment for the practical nurse. Clinical experiences are provided in acute and community settings utilizing an interdisciplinary collaborative approach.

NURS 205 Advanced Medical Surgical Nursing (2.5-6) 4.5 Cr. Hrs.

Prerequisites: NURS 107 , NURS 108 and NURS 128.

This course emphasizes comprehensive application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in caring for adult clients experiencing complex medical and surgical alterations within the registered nurse scope of practice. Theoretical content focuses on advanced concepts of intravenous therapy, dysrhythmias, oncology, end-of-life care, alternative therapies and emergency/critical care nursing in addition to select neurological, ear/eye, integumentary and reproductive system alterations. Clinical experiences are provided in acute and community settings utilizing an interdisciplinary collaborative approach.

NURS 246 Psychiatric Mental Health Nursing (2-6) 4 Cr. Hrs.

Prerequisites: NURS 107 , NURS 108 , NURS 128 and PSYCH 201.

This course emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in caring for adult, child and adolescent clients with mental illness within the registered nurse scope of practice. Theoretical content focuses on clients experiencing mental health alterations. Clinical experiences are provided in acute, chronic and community

mental health care facilities utilizing an interdisciplinary collaborative approach.

NURS 248 Maternal-Child Nursing 2 (2.5-7.5) 5 Cr. Hrs.

Prerequisites: NURS 107 , NURS 108 and NURS 128.

This course emphasizes application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing in caring for the childbearing family and pediatric clients. Theoretical content focuses on complex obstetrical and pediatric health disorders within the registered nurse scope of practice. Clinical experiences with the childbearing family and pediatric clients are provided in acute and community settings utilizing an interdisciplinary collaborative approach.

NURS 250 Advanced Concepts in Registered Nursing (2-7.5) 4.5 Cr. Hrs.

Prerequisites: NURS 205 , NURS 246 and NURS 248.

This capstone course emphasizes comprehensive application of the nursing process and critical thinking skills while utilizing evidence-based principles of nursing to care for groups of complex clients within the registered nurse scope of practice. Theoretical content focuses on community health nursing, disaster preparedness/terrorism, health policy, principles of leadership, management, research, quality improvement and delegation as well as issues related to licensure and employment for the registered nurse. Clinical experiences are provided in acute and community settings utilizing an interdisciplinary collaborative approach.

OIS 100 Keyboarding 1 (2-0) 2 Cr. Hrs.

Prerequisites: None.

Students will learn how to keyboard using the touch control method. Development of proper keyboarding techniques while building basic accuracy and speed will be emphasized. Today's technology-driven environment makes keyboarding one of the most widely used skills as we utilize computers for work, school and in our personal lives.

OIS 102 Keyboarding 2 (2-0) 2 Cr. Hrs.

Prerequisites: OIS 100 or equivalent.

This course continues the development of accuracy and speed in keyboarding. Students will enhance their keyboarding skills and incorporate them into the formatting of various business documents, reports and tables.

OIS 105 Office Communication - Editing Skills (3-0) 3 Cr. Hrs.

Prerequisites: A skill level of ENG 050 or higher on the placement test. OIS 102 strongly recommended.

The ability to communicate clearly and accurately has been identified by employers as their number one priority. This course is designed to review and incorporate the principles of grammar, punctuation, vocabulary and spelling into the writing of or proofreading and editing of business documents.

OIS 165 Microsoft Word for Windows (3-0) 3 Cr. Hrs.

Prerequisites: OIS 105 or equivalent.

This course is designed to provide practical hands-on experience using Microsoft Word for Windows. Students will create, format, and edit business documents. In addition, students will work with tables, charts, graphs, diagrams, templates and wizards, AutoText, Web pages and hyperlinks. While manipulating text, students will learn to add visual appeal to documents as well as how to use writing tools and special features.

OIS 185 Business Presentation 1 - Fundamental Concepts (3-0) 3 Cr. Hrs.

Prerequisites: OIS 165 or equivalent.

This course will introduce students to the fundamental concepts of business presentations using Microsoft's PowerPoint software. PowerPoint presentations are one of the most widely used communication tools is today's workplace. Students will create basic business presentations, charts, graphs and flyers. Students will learn to link and embed objects and files as well as work with drawing tools, icons, various fonts and color to create a powerful presentation.

OIS 195 Time and Project Management (1-0) 1 Cr. Hrs.

Prerequisites: None.

In today's busy world, time management is an essential skill needed both professionally and personally. This course will assist students in gaining control of their office activities by showing them how to set and prioritize goals and events around individual values using a day planner.

OIS 255 Office Procedures (2-0) 2 Cr. Hrs.

Prerequisites: OIS 100 or equivalent.

This course is designed to enhance the students' knowledge regarding basic office skills. Students will learn office functions such as reprographics, records management, telephone techniques and etiquette, mailing and shipping services, meeting and conference planning, travel arrangements, as well as the importance of written communication and public relations.

OIS 260 Office Administration (3-0) 3 Cr. Hrs.

Prerequisites: OIS 255 recommended.

Today's administrative office manager must be an effective communicator who possesses strong skills in problem solving, time management, multi-tasking and human relations. This course concentrates on the principles of administrative office management, the importance of managing administrative services and operations and the skills and attitudes needed to be successful in today's office.

OIS 265 Advanced Microsoft Word for Windows (3-0) 3 Cr. Hrs.

Prerequisites: OIS 165.

This course is a continuation of OIS 165 and will focus on the advanced functions of Microsoft Word for Windows. Students will create and modify styles, macros, footnotes and endnotes. In addition, students will work with sorting and selecting text, merging and managing documents, preparing forms, applying special features, adding visual effects and using WordArt.

OSH 111 Occupational Safety and Health for General Industry (2-0.5) 2 Cr. Hrs.

Prerequisites: None.

This course serves as a safety and health training program designed for general industry personnel. The course will cover employee rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards. Federal Occupational Safety and Health Administration (OSHA) and Michigan Occupational Safety and Health Administration (MIOSHA) standards that relate to hazard identification and control will be covered. This course is "OSHA-authorized." Therefore, students who successfully complete the course are eligible for the OSHA 30 hour card in General Industry.

OSH 112 Occupational Safety and Health for Construction (2-0.5) 2 Cr. Hrs.

Prerequisites: None.

This course serves as a safety and health training program designed for construction personnel. The course will cover employee rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent critical construction related hazards. Federal Occupational Safety and Health Administration (OSHA) and Michigan Occupational Safety and Health Administration (MIOSHA) standards that relate to hazard identification and control will be covered. This course is "OSHA-authorized." Therefore, students who successfully complete the course are eligible for the OSHA 30 hour card in Construction.

PE 104 Physical Fitness and Conditioning (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course stresses vigorous body conditioning through progressive exercises, stretching, weight machine and free weight use. Cardiovascular fitness will be emphasized.

PE 105 Beginning Resistance Training (1-1) 2 Cr. Hrs.

Prerequisites: None.

Instruction will stress the development of strong muscle growth and bone health, as well as improvement of cardiovascular function through the use of resistance bands, X-er tubes, stability balls and free weights.

PE 106 Beginning Swimming (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course is for the student who has little or no skill and knowledge of swimming techniques. Fundamental instruction in the basic swimming strokes, including front crawl, back crawl, elementary back stroke, side stroke, elementary diving and water safety skills will be introduced.

PE 111 Introduction to Kinesiology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This lecture course will introduce the student to a conceptual model of kinesiology, the sub-disciplines within kinesiology, and how the sub-disciplines contribute to our understanding of the broad spectrum of human physical activity. Topics to be covered include: 1) a holistic overview of human physical activity, 2) understanding how physical activity is studied, 3) the introduction of possible careers in kinesiology and 4) the responsibilities of a kinesiology professional.

PE 112 Introduction to Exercise Physiology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will introduce the student through lecture and practical demonstration to the fundamentals of exercise physiology. The topics will include cardiorespiratory, neuromuscular and endocrine anatomy; systems physiology; basic nutrition; metabolic pathways; and energy expenditure.

PE 114 Pilates Mat Work (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course offers students an effective conditioning program for the entire body using a series of floor exercises to increase mobility, strength, flexibility and concentration. The exercise program is designed for those who want to improve core strength to maintain a healthy back, to ease into exercise and to improve posture and balance; it provides challenge with little to no impact to joints. Proper breathing and correct spinal alignment will be emphasized.

PE 115 Aerobic Dance Fitness (1-1) 2 Cr. Hrs.

Prerequisites: None.

Instruction will stress the development of an individual’s aerobic capacity and cardiovascular endurance through aerobic dance and dance exercise.

PE 116 Intermediate Swimming (1-1) 2 Cr. Hrs.

Prerequisites: None.

For students who have the ability to swim two lengths of the pool and stay afloat for three minutes. Designed to increase skill and knowledge in the basic swimming strokes, diving and water safety skills. Some stroke variations and synchronized swimming techniques may be covered.

PE 121 First Aid and Personal Safety (2-0) 2 Cr. Hrs.

Prerequisites: None.

This course introduces accident prevention and care of victims using emergency-skill procedures. Cardiopulmonary resuscitation (CPR) for infant, child and adult and Automated External Defibrillator (A.E.D.) use will be presented. American Red Cross Certification Cards will be awarded to those successfully completing the requirements.

PE 132 Beginning Tennis (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course provides students with a basic history of tennis, techniques, fundamental skills, strategy, rules and the opportunity to participate in a competitive situation.

PE 141 Basketball (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course covers the history of the sport, basic techniques, fundamental skills, strategy and rules and gives students the opportunity to participate in a competitive situation.

PE 143 Fitness Tests and Measurements (2-1) 3 Cr. Hrs.

Prerequisites: None.
Recommended: PE 112.

This course will introduce the student through lecture and practical demonstration to various fitness assessment protocols. Students will learn to critically analyze why a particular fitness test is utilized, the standard procedures for conducting the test and the analysis of the test results.

PE 147 Exercise Techniques (2-1) 3 Cr. Hrs.

Prerequisites: None.
Recommended: PE 112.

This course will introduce the student to proper resistance, cardiovascular, flexibility and neuromotor exercise techniques. Instructional method options will be introduced to facilitate teaching in both one-on-one and group exercise settings. This class will also provide instruction in how to lead and manage group exercise classes.

PE 153 Volleyball (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course exposes students to the fundamentals and game strategies used in the game of volleyball. Emphasis will be placed on basic skills such as serving, passing and blocking. Students will have the opportunity to participate in competitive situations.

PE 157 Paddleball/Racquetball (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course provides instruction in rules, safety practices, etiquette, strategy and skills of paddleball and racquetball. Tournament play in singles, doubles and cut-throat is included.

PE 194 Weight Training (1-1) 2 Cr. Hrs.

Prerequisites: None.

Various methods of weight training for both men and women are taught. Proper lifting techniques learned. The concept of "total fitness and body awareness" is stressed.

PE 202 Lifestyle Fitness - Wellness (1-1) 2 Cr. Hrs.

Prerequisites: None.

This course will introduce the student through lecture and practical demonstration to the various methods and benefits of physical and emotional fitness/wellness activities. A wide variety of topics pertinent to the physical and mental health and well-being of the individual will be presented and practiced, providing the framework for the student to make sound health choices.

PE 207 Facilities Operations (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: PE 111.

This course will introduce the student to the full spectrum of fitness facility operations. Topics will include marketing, membership, budgeting, staffing, facility design, equipment selection, standard operation procedures, facility programming and risk management.

PE 212 Applied Exercise Physiology (2-1) 3 Cr. Hrs.

Prerequisites: PE 112 , PE 143 and PE 147.

This course will introduce the student through lecture and practical demonstration how to integrate exercise physiology, personal assessment data, exercise technique, standardized exercise guidelines and client goals into appropriate individual and group workout program designs across multiple fitness populations. Health behavior change models and interview and counseling techniques will be presented to help facilitate instructor-client communications.

PE 225 Motor Development (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will examine the progression/regression of motor skill development across the lifespan. Beginning with conceptual modeling of motor development, multiple factors influencing motor skill development will be examined. Assessment methods will be identified that facilitate benchmarking and monitoring change.

PE 240 Physical Education for Elementary Teachers (3-0) 3 Cr. Hrs.

Prerequisites: None.

Students will receive instruction in the use of basic movement, games, relays, stunts, and organization for the early and later elementary grades. Emphasis is on the organization for P.E. at these levels. Students are required to make arrangements for observation of elementary classes during the latter part of the semester.

PE 290 Fitness Leadership Internship (1-12/40) 3 Cr. Hrs.

Prerequisites: PE 212 with a minimum grade of 3.0, Schoolcraft College overall GPA of 2.5 or better and consent of department.

This course will provide the student with a capstone opportunity to apply Fitness Leadership theory and practice within a mentored environment. This is an applied course within Occupational Programs specializing in the field of fitness leadership and is a cooperative assignment for students who have completed the prerequisites for this course. Employment will be approximately 12-40 hours per week at the employer's location. The final grade will be based on a joint evaluation by the college and the employer. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement. Department permission is required before registering for this course. An Internship Seminar every three weeks will provide students with the opportunity to share and evaluate their experience in a time-critical manner.

PHARM 101 Introduction to Pharmacy (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course will provide students with an overview of pharmacy and possible careers within the pharmacy field. Students will be presented a survey of the profession including its history, development, career opportunities, educational requirements, professional organizations, scope of practice, regulation, ethical foundations, contemporary issues, and prospects for the future. In this course, students will self-assess their career compatibility within the field of pharmacy.

PHARM 201 Capstone - Portfolio Preparation (1-0) 1 Cr. Hrs.

Prerequisites: PHARM 101. Must have taken PCAT or registered to take it during this course.

This course concludes the Pre-Pharmacy Program with the student's development of his/her admission portfolio for a prospective transfer university. Students will review their college learning experience as they collect, organize, and reflect upon evidence that demonstrates their attitudes, skills, knowledge, and abilities in the sciences, mathematics, and general education areas, according to the requirements of the transfer institution. In addition, students are required to take the PCAT (Pharmacy College Admission Test) for inclusion of results in the admission portfolio.

PHIL 243 An Introduction to Philosophy (3-0) 3 Cr. Hrs.

Prerequisites: None.

Designed to familiarize the student with philosophy as a foundation for life, this course provides an introduction to questions in metaphysics, epistemology, ethics, social and political philosophy and the philosophy of religion. Classical and modern philosophers from Western, Asian, African and Native American traditions are presented. Critical thinking and an application of theory to contemporary issues are emphasized.

PHIL 247 Logic (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is designed to assist the student in distinguishing good and bad reasoning. The course will address both informal logic which focuses on arguments in everyday language and how to evaluate them and formal logic which focuses on symbolic language and the formal methods for determining the validity of arguments. Common logical fallacies will be outlined and attention given to arguments on contemporary issues in the public forum.

PHIL 257 Bioethics (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course introduces students to a variety of ethical issues having to do with biology, health, and medicine. Students will be introduced to ethical theories and will critically examine various central issues in bioethics. Topics may include: end of life treatment, abortion, allocation of scarce materials, organ donation, the vaccine debate, animal rights, informed consent, justice and healthcare, genetic engineering and the meaning of life/death and technology.

PHIL 277 Ethical Problems (3-0) 3 Cr. Hrs.

Prerequisites: None.

In this course the student will be introduced to a variety of ethical theories as discussed by classical and contemporary moralists. The course experience also provides for an application of these theories to modern moral questions through a process of critical thinking to explore alternate solutions to present day moral problems.

PHYS 104 Introduction to Astronomy (3-2) 4 Cr. Hrs.

Prerequisites: MATH 53 or one year of high school algebra.

PHYS 104 is a one-semester introduction to astronomy that utilizes laboratories and basic mathematics to assist in, and expand upon, the exploration of the course topics. Earth-sky relationships, the solar system, stellar astronomy, cosmology and astrobiology will be covered. Several space exploration missions will also be featured. This course is not intended for science majors.

PHYS 123 Applied Physics (4-2) 5 Cr. Hrs.

Prerequisites: MATH 113.

This course in applied physics is designed for technical, business and applied health programs. Using trigonometry, the traditional topics of kinematics, dynamics, mechanics, heat, acoustics, electricity and magnetism, optics, modern physics and nuclear physics are treated in a practical and applied fashion with emphasis on laboratory work and scientific procedures.

PHYS 181 General Physics 1 (4-2) 4 Cr. Hrs.

Prerequisites: PHYS 123 or one year of high school physics. MATH 119.

This first semester course in general physics is designed for pre-professional students. Using algebra and trigonometry, the traditional topics of mechanics, fluids, energy, heat and sound are explored through lecture demonstrations, interactive activities and laboratory work. This course is not for engineering students or physics majors.

PHYS 182 General Physics 2 (4-2) 4 Cr. Hrs.

Prerequisites: PHYS 181.

This second semester course is a continuation of PHYS 181. Using algebra and trigonometry, the more advanced topics of electricity, magnetism, light and modern physics are explored through lecture demonstrations, interactive activities and laboratory work. This course is not for engineering students or physics majors.

PHYS 211 Physics for Scientists and Engineers 1 (5-2) 5 Cr. Hrs.

Prerequisites: PHYS 123 or high school physics. MATH 150.

This first semester, calculus-based course is designed for engineering students and science majors. Traditional topics of kinematics, dynamics, energy, fluids, heat and sound are investigated through lecture demonstrations, simulations and laboratory work.

PHYS 212 Physics for Scientists and Engineers 2 (5-2) 5 Cr. Hrs.

Prerequisites: PHYS 211 with grade of 2.0 or better.

This second semester, calculus-based course is a continuation of PHYS 211. Advanced topics such as electricity, magnetism, light and modern physics are investigated through lecture demonstration, simulations and laboratory work. This course is designed for engineering students and science majors.

PLAST 130 Introduction to Plastic Materials (2-1) 3 Cr. Hrs.

Prerequisites: None.

This course provides an introduction to plastic materials selection and testing. Students will gain an understanding of plastic selection criteria based upon chemical and physical properties of thermoplastic and thermoset materials and how this choice relates to part performance. In addition, students will be introduced to basic physical, analytical and mechanical tests that are critical in the selection process. Finally, there will be a brief overview of the common techniques used in polymer processing.

PLAST 131 Introduction to Plastic Processing (2-1) 3 Cr. Hrs.

Prerequisites: None.

This course provides an understanding of the different processing technologies associated with producing a finished part from plastic materials. The student will learn about the different molding processes, including injection, compression, blow molding, extrusion, thermoforming and composite manufacturing.

PLAST 140 Plastic Materials Testing (2-1) 3 Cr. Hrs.

Prerequisites: PLAST 130.

This course provides an in-depth analysis of plastic material's testing. Students will gain an understanding of plastic testing procedures and how they are applied to evaluating plastic materials performance characteristics. The student will also develop the ability to report, and demonstrate the ability to understand, the test results.

PLAST 150 Plastic Injection Molding Technology (2-1) 3 Cr. Hrs.

Prerequisites: PLAST 130 and PLAST 131.

This course provides an understanding of the injection molding process. The student will learn about the injection molding process, including the components of the injection molding process, injection molding equipment, mold tooling, process control systems, basic part design principles, plastic materials, secondary processes and novel injection molding processes.

PLAST 160 Process Control Systems for Plastic Manufacturing (2-1) 3 Cr. Hrs.

Prerequisites: MATH 102 and PLAST 131.

Plastic processing is a combination of knowledge, skill and experience. This course will provide a foundation for understanding how to reach the final desired result. It is necessary to understand how the machinery and the systems utilized in the production of plastic parts work, what the inputs to the process are and how they affect the final product.

PLAST 210 Plastic Mold Design Fundamentals (2-1) 3 Cr. Hrs.

Prerequisites: PLAST 130 , PLAST 131 and PLAST 150.

This course provides an understanding of plastic mold design. Emphasis will be focused on tool design for injection molding. The course will also include tool design for compression molding, blow molding, extrusion, thermoforming and the composite manufacturing processes.

PLAST 220 Plastic Part Design (2-1) 3 Cr. Hrs.

Prerequisites: PLAST 130 , PLAST 131 and PLAST 150.

This course provides an understanding of plastic part design. Students will learn design requirements, design features, quality and tolerances, plastic material selection for specific processes, part costs and rapid prototyping techniques. Emphasis will be placed on part design for injection molding. Part design for compression molding, blow molding, extrusion, thermoforming and composite manufacturing processes also will be covered.

PLAST 240 Advanced Plastic Processing (1-2) 3 Cr. Hrs.

Prerequisites: PLAST 130 and PLAST 131.

This course provides an understanding of advanced plastic processing methods. The student will learn about additive manufacturing (e.g., 3D printing or rapid prototyping), micro injection molding, multi-laminate thermoforming, hybrid blow molding, multi-material co-extrusion and thermoset and thermoplastic composite compressing/laminating processes.

PLAST 250 Advanced Injection Molding (1-2) 3 Cr. Hrs.

Prerequisites: PLAST 150.

This course will provide detailed knowledge of advanced injection molding processes. Specific advanced injection molding topics

covered in this course include: Two Shot, Co-Injection, Injection Blow Molding, Gas Assist, Gas and Melt Counter-Flow Molding, Structural Foam Molding, Injection-Compression Molding, Reaction Injection Molding, Liquid Molding, Ram Injection, Micro Injection and Water Assist Injection Molding.

POLS 105 Survey of American Government (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is an introductory study of the American political system. Emphasis is placed on historical and contemporary political theories and ideologies as well as on political institutions, parties and interest groups. You will engage in analysis of decision-makers, power and controversial issues.

POLS 109 State and Local Government (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is an introductory study of America's state and local governments. Emphasis is placed on the nature of state constitutions, the structure and operation of state executive/legislative/judicial branches, and the organization and functioning of local governments. State/federal and state/local relations will also be covered in this course. Students will engage in analysis of decision-makers, power and controversial issues.

POLS 205 Political Parties (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course examines the organization and functions of American political parties. Emphasis is placed on the nature of political campaigns, party conventions, the organization and functioning of political parties and citizen participation in politics. A historical review of parties and their ideological developments is also included.

POLS 207 Comparative Government (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is a comparative study of political communities. The course examines the development and spread of varied political ideologies (communism, fascism and liberalism) and their impact on crafting different approaches to governmental organization. A global approach to this topic will involve examining individual countries and regions from around the world.

POLS 209 International Relations (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides an examination of the social, economic and political forces that define international relations. Using the major theoretical approaches of the discipline, students will examine the major issues, actors and governmental structures that shape the political landscape of the world.

POLS 298 Political Science Honors Studies (.5-2.5) 3 Cr. Hrs.

Prerequisites: Successful completion of POLS 105 and written approval from the instructor and department representative.

An opportunity for a student to explore individually, in depth, under the guidance of a faculty member, a topic, issue, problem or fieldwork experience pertaining to or within a government office, political party, interest groups or other organization that allows them to relate their experiences to the study of political science. This study arrangement will take place under the guidance of a departmental faculty member.

PSYCH 153 Human Relations (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course is designed particularly for students in the career curricula. The course focuses upon a better understanding of human behavior as related to interpersonal relations on the job. Foundations of human behavior; strategies for effective human relations; fundamental skills of working as a team leader and team member; and ways of anticipating, preventing and coping with challenges of human relations are major areas of study.

PSYCH 201 Introductory Psychology (4-0) 4 Cr. Hrs.

Prerequisites: None. Recommended: Successful completion of courses in Biology and Social Science at the 100 level.

Principles of human thought and action with emphasis on individuals in their environment; individual differences in intelligence and personality; effects of heredity and environment on the organism; and the nervous system, perception, learning, intelligence, motivation and emotion and social relationships will be explored.

PSYCH 205 Psychology of Adjustment (3-0) 3 Cr. Hrs.

Prerequisites: PSYCH 201 with a minimum grade of 2.0.

Factors and processes involved in the adjustment of the individual to personal and social environment are the main focus of this course. Essentials for the development of an effective and mentally healthy individual are emphasized. Foundations for adjustment, personal lifestyle adjustment, interpersonal relationships, adjustment throughout life and coping with maladjustment are major areas of study.

PSYCH 206 Human Sexuality (3-0) 3 Cr. Hrs.

Prerequisites: PSYCH 201 with a minimum grade of 2.0.

This course examines a variety of facets of human sexuality from the biological, psychological and social perspectives. We will investigate the intersections of sexuality and gender and survey the biological and psychological research concerned with constructs such as: anatomy, normative function, dysfunction and treatment, family planning methods, sexual communication, sexually transmitted diseases, sexual variation and attitudes toward one's body. Critical issues directly and indirectly associated with sexual behavior will also be addressed.

PSYCH 207 Social Psychology (4-0) 4 Cr. Hrs.

Prerequisites: PSYCH 201 with a minimum grade of 2.0.

Regarded as a core area in psychology, social psychology examines the influence of social factors on human behavior. Particular topics include aggression, prejudice, group processes, attitude formation, the law, prosocial behavior, interpersonal attraction and social cognition.

PSYCH 209 Child Psychology (3-0) 3 Cr. Hrs.

Prerequisites: PSYCH 201 with a minimum grade of 2.0.

This course examines the general characteristics of development, development of social behavior, feelings, emotions, language, growth of understanding and interests, with emphasis on personality and problems of adjustment.

PSYCH 219 Adult Development (3-0) 3 Cr. Hrs.

Prerequisites: PSYCH 201 with a minimum grade of 2.0.

This course studies adult development and aging. It focuses on the developmental changes related to biological, psychological and social processes. Coping strategies and intervention techniques will be examined.

PSYCH 229 Life-Span Developmental Psychology (4-0) 4 Cr. Hrs.

Prerequisites: PSYCH 201 with a minimum grade of 2.0.

Human development from conception through death is examined. Biological, cognitive and psychosocial development topics are explored with an understanding of the theories and research findings across the life-span.

PSYCH 239 Abnormal Psychology (3-0) 3 Cr. Hrs.

Prerequisites: PSYCH 201 with a minimum grade of 2.0.

This course examines various psychological disorders from a contemporary perspective, specifically exploring anxiety disorders (phobias, obsessive compulsive disorder and post-traumatic stress disorder), categories of personality disorders (bi-polar and depressive disorders), schizophrenia and several others. The underlying pathology and treatments of each disorder will be covered. Legal, ethical and other current health psychology will also be explored.

PSYCH 249 Educational Psychology (3-0) 3 Cr. Hrs.

Prerequisites: None.

Principles of human thought and action with emphasis on individuals in their environment; individual differences in intelligence and personality; effects of heredity and environment on the organism; the nervous system, perception, learning, intelligence, motivation

and emotion, and social relationships will be explored.

QM 107 Quality Planning and Team Building (3-0) 3 Cr. Hrs.

Prerequisites: None.

Planning effective quality systems including error prevention through team building to support both recommended procedures and customer satisfaction is emphasized. Students will be introduced to planning methods, Six Sigma Methods, Quality Function Deployment (QFD), Failure Mode and Effects Analysis (FMEA) and new quality related programs used in process/product development validation. Control plans and teamwork will be used to demonstrate the dynamics of synergism in groups.

SOC 101 Introduction to Social Work (3-0) 3 Cr. Hrs.

Prerequisites: None.

Introduction to Social Work is an introductory course to the social work field designed to provide students with an overview of the profession. Content will include an analysis of the profession, its scope, methods, values and the organization of services. Attention will be paid to presenting information on policy and practice in a variety of social work settings with particular target populations. The course orients students to the roles of the generalist social work practitioner within a theoretical framework that consists of systems theory, the ecological perspective and a problem solving model. Attention will be paid to the kinds of needs and problems that bring clients to the attention of social workers. The term "client" is defined as an individual, family, group, neighborhood, organization or large social system. The course stresses self-assessment in determining suitability for a career in social work.

SOC 201 Principles of Sociology (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course provides a survey of the major theoretical perspectives, concepts and methods of sociology. Topics covered include social organization, culture, socialization, stratification systems, social institutions and social change.

SOC 205 Social Problems (3-0) 3 Cr. Hrs.

Prerequisites: None.
Recommended: SOC 201.

Consideration of current social problems, such as family stability, racism, sexism, poverty, crime, globalization and ecological problems using sociological theory and empirical studies. Analysis of structural factors underlying these problems and potential solutions will be explored.

SOC 209 Marriage and Family (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course offers a study of the impact that social changes have had on gender roles, relationships, marriage and family life. Topics covered in the course include diversity in family patterns, gender roles, intimate behavior, mate selection, problems of marital adjustment, family stability and crisis, divorce and parenting.

SOC 210 Cultural Diversity (3-0) 3 Cr. Hrs.

Prerequisites: SOC 201 or ANTH 112 recommended.

This course is an analysis of racial and ethnic diversity in the U.S. in relation to evolving social, economic and cultural factors. Various American minority cultures are studied with an emphasis on education, politics, religion and the resulting cultural effects. Sociological and psychological concepts and theories will be explored. The impact of the current wave of immigrants to the U.S. will be discussed and the incidents of hate crimes will be explored.

SOC 220 Urban Sociology (3-0) 3 Cr. Hrs.

Prerequisites: SOC 201 or ANTH 112 recommended.

This course provides a survey of the origin and development of cities and the processes of urbanization which includes a discussion of the ecology and social organization of urban life. The special problems and realities of urban society will be covered as well as perspectives for the future.

SOC 290 The Individual and Community - An Honors Capstone Course (3-0) 3 Cr. Hrs.

Prerequisites: HUM 190 and 75 Service Hours.

A required conclusion to the Schoolcraft Scholars Honors Program, this capstone course examines individual, social structural and social institutional relationships through multiple disciplines. Students will identify and analyze social and cultural trends and issues. During the course, students will complete and present results of service-learning projects.

SPAN 101 Elementary Spanish 1 (4-0) 4 Cr. Hrs.

Prerequisites: None.

This course is intended for students who have no previous education in Spanish. The course will cover basic grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of Hispanic culture will be an integral part of the course.

SPAN 102 Elementary Spanish 2 (4-0) 4 Cr. Hrs.

Prerequisites: SPAN 101 with grade of 2.0 or better or one year of high school Spanish or consent of instructor.

This course is a continuation of SPAN 101 and continues to review the basic Spanish grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of Hispanic culture will be an integral part of the course.

SPAN 201 Intermediate Spanish 1 (4-0) 4 Cr. Hrs.

Prerequisites: SPAN 102 with grade of 2.0 or better or two years of high school Spanish or consent of instructor.

This course is a continuation of SPAN 102 and continues to cover grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of Hispanic culture will be an integral part of the course.

SPAN 202 Intermediate Spanish 2 (4-0) 4 Cr. Hrs.

Prerequisites: SPAN 201 with grade of 2.0 or better or three years of high school Spanish or consent of instructor.

This course is a continuation of SPAN 201 and continues to cover grammar patterns and build competence in all four skill areas: speaking, listening, reading and writing. Through varied activities, emphasis will be placed on oral proficiency and communication. An appreciation of Hispanic culture will be an integral part of the course.

SPE 100 Children with Special Needs (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken.

This course is designed to introduce students to the topic of children/students with special needs. Included is the exploration of cognitive impairments, emotional impairments, learning impairments, visual and hearing impairments, orthopedic and/or other health impairments, giftedness and instructional strategies for these special needs. Field experiences in special education placements are required in this course.

SPE 105 Introduction to Developmental Disabilities (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken. SPE 100 or EDUC 200 if not previously taken.

This course is designed to introduce students to the health and developmental problems of persons with cognitive impairment (CI). Emphasis is placed on gaining knowledge of the various syndromes typical in CI populations and learning to recognize medical symptoms. Attention will also be given to developing an understanding of prescribed drugs' potential uses and side effects, as well as other potential health and environmental issues for persons with cognitive impairments.

SPE 115 Special Educational Programs and Supported Living (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken. SPE 100 or EDUC 200 if not previously taken.

Students will become familiar with considerations of placement and training of persons with cognitive impairments, emotional impairments, learning impairments and physical disabilities. Attention will be given to the theory and principles of inclusion and appropriate community support. The course will cover the operation and maintenance of supportive living environments. In addition, current laws and regulations regarding licensing, equipping and maintaining the physical plant, staffing, food services, health and social services, budgeting and program development will also be addressed.

SPE 125 Learning Disabilities (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: ECE 110 or EDUC 110 if not previously taken. SPE 100 or EDUC 200 if not previously taken.

This course is designed to acquaint the student with the perceptual and learning issues of persons with learning disabilities and special education programs in the public school which provide specialized learning situations for them. The diagnosis of disorders of visual and auditory perception, language, motor coordination, cognition and attention-deficit related to the learning processes are discussed. Coursework explores specific recommendations for remediation and implications for school planning when working with students with learning disabilities. Current best practices in the field of special education provide the framework for the course.

SPE 135 Emotional Impairment (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110. SPE 100 or EDUC 200.

The purpose of this course is to acquaint students with concepts and materials related to the education of persons with emotional impairments. The major theories related to causes and treatment of emotional and behavior problems will be covered. Current best practices provide the foundation for studying strategies necessary for working with persons with emotional impairments.

SPE 145 Special Education Practical Experiences 1 (2-8) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110. SPE 100 or EDUC 200.
Corequisites: SPE 220 if not previously taken.

Students will have a supervised practical field experience working directly with persons with special needs in a special needs setting. A total of 120 practical field experience hours are required. Students will integrate classroom knowledge and teaching strategies with practical field experiences working directly with persons with special needs. Field experiences must be passed with a minimum grade of 2.5. Students must successfully pass the course with a 2.5 in order to be eligible to earn credit for the course. Students have two opportunities to pass the Special Education Practical Experiences 1. Students that do not pass the course at the second attempt may not remain in the program.

SPE 210 Methods and Curricula for Persons with Developmental Disabilities (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110. SPE 100 or EDUC 200.

This course will familiarize the student with the theoretical approaches of education for persons with special needs including a survey of various curricula. Emphasis is placed on understanding educational roles in the Individual Education Plan Process and the Individualized Family Service Plan requirements. Current best practices provide the framework for strategies employed when working with persons with developmental disabilities explored in this course.

SPE 220 Early Childhood Special Education (3-0) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110.

Early Childhood Special Education focuses on children with special needs birth to eight years old. The course looks at current categories of special needs for the young child, services available, the role of the educator as a member of a team addressing the educational and care needs of the child and the importance of working respectfully with families. Current best practices from the field for identifying special needs in the young child are explored.

SPE 270 Special Education Practical Experiences 2 (2-10) 3 Cr. Hrs.

Prerequisites: ECE 110 or EDUC 110 ; SPE 100 or EDUC 200 ; SPE 125 ; and SPE 145.
Corequisites: SPE 210 and ECE 230 if not previously taken.

This course is designed to provide a continued supervised practical experience working directly with children and adults with special needs in educational and group settings. Students will have increased responsibility providing and implementing activities for children and adults with special needs. Emphasis will be placed on working as a contributing member of a teaching team. Students

will spend 150 hours over the course of the semester in their approved practical field placement. Students must pass the field experience portion of the course with a 2.5. A grade of 2.5 must be earned in order to be eligible to earn credit for the course. Students have a maximum of two attempts at taking and passing the course. Students who do not pass the course after the second attempt may not remain in the program.

SRT 110 Keyboard Skills for Recording Engineers (1-0) 1 Cr. Hrs.

Prerequisites: MUSIC 121.

Students will apply knowledge gained in MUSIC 121 to use with electronic keyboard instruments used in the modern recording studio. Emphasis is on the operation of modern electronic keyboard instruments, MIDI and developing the fundamental musical skills used in contemporary music production. These skills will be applied to individual projects in the laboratory.

SRT 121 Basic Sound and Recording Techniques 1 (3-0) 3 Cr. Hrs.

Prerequisites: None.

Fundamentals of the recording arts, including basic audio and acoustical theory, recording consoles, tape recorders, microphone design and technique, speakers and signal processing will be introduced in this course.

SRT 122 Basic Sound and Recording Techniques 2 (3-0) 3 Cr. Hrs.

Prerequisites: SRT 121.

Multi-track studio production techniques are developed through class discussion, demonstration and project assignments. Theory of digital audio technology and its integration into music production is emphasized.

SRT 150 Ear Training for Recording Engineers (2-0) 2 Cr. Hrs.

Prerequisites: SRT 121 or consent of department.

Listening skills particular to the recording engineer are developed through demonstration and ear training exercises. These skills include hearing and discriminating frequencies, levels, processing, phase, distortion and equalization. Application of these skills to multi-track mixing is emphasized and developed through hands-on assignments using a variety of professional mixing systems.

SRT 221 Advanced Audio Production 1 (3-0) 3 Cr. Hrs.

Prerequisites: SRT 122 and SRT 150.

This course is a comprehensive examination of the principles and applications of digital audio in today's recording and interactive media industries. Computer-based recording and editing is emphasized along with musical instrument digital interface (MIDI) technology.

SRT 222 Advanced Audio Production 2 (3-0) 3 Cr. Hrs.

Prerequisites: None.
Corequisites: SRT 221.

This course is a continuation of SRT 221 and recording in the digital domain. Areas of focus will include advanced mixing and editing techniques, synchronization, mastering, post-production and surround sound.

THEA 101 Introduction to Theatre (3-0) 3 Cr. Hrs.

Prerequisites: None.

A survey course which examines all the elements of theatre: actor, director, playwright, scenery, costumes, makeup, lighting, sound, audience, theatre publicity, theatre management and critic. The course offers the opportunity for developing an appreciation of theatre and how it relates to the world.

THEA 120 Theatre Activities 1 (1-0) 1 Cr. Hrs.

Prerequisites: None.

A brief introduction to all the elements of theatre: actor, director, playwright, scenery, costumes, makeup, lighting, sound, audience, theatre publicity, theatre management and critic. Students are required to work on a current production.

THEA 121 Theatre Activities 2 (1-0) 1 Cr. Hrs.

Prerequisites: THEA 120 recommended.

This course is a continuation of THEA 120 and continues to explore all the elements of theatre: actor, director, playwright, scenery, costumes, makeup, lighting, sound, audience, theatre publicity, theatre management and critic. Students are required to work on a current production.

THEA 204 Stage Makeup (2-0) 2 Cr. Hrs.

Prerequisites: None.

An introductory course in stage makeup application. The course covers basic makeup, character makeup, old-age makeup and special effects. Discussion on types of makeup and practical student application projects.

THEA 207 Stagecraft and Lighting (3-0) 3 Cr. Hrs.

Prerequisites: None.

This course investigates stage designs and lighting theories with a practical application by work on the college production. The course also covers the basic knowledge of set construction, lighting and its equipment, costume construction, makeup techniques and costume maintenance. Students are required to work on a current production.

THEA 210 Acting 1 - Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: None.

An introduction into the theories of acting. Students study the role of voice, body movement and character development as it relates to acting. In addition, students are introduced to modern drama and productions.

THEA 211 Acting 2 - Theory and Elements (3-0) 3 Cr. Hrs.

Prerequisites: THEA 210 or consent of instructor.

An advanced course where students analyze the theories and elements of acting with a focus on classical and modern plays. Students study the Stanislavski Method and the Alexander Technique of body alignment in acting.

THEA 220 Theatre Activities 3 (1-0) 1 Cr. Hrs.

Prerequisites: THEA 121 recommended.

This course is a continuation of THEA 121 and continues to explore all the elements of theatre: actor, director, playwright, scenery, costumes, makeup, lighting, sound, audience, theatre publicity, theatre management and critic. Students are required to work on current production.

THEA 221 Theatre Activities 4 (1-0) 1 Cr. Hrs.

Prerequisites: THEA 220 recommended.

This course is a continuation of THEA 220 and will continue to explore all the elements of theatre: actor, director, playwright, scenery, costumes, makeup, lighting, sound, audience, theatre publicity, theatre management and critic. Students are required to work on current production.

THEA 231 History of Theatre 1 (3-0) 3 Cr. Hrs.

Prerequisites: None.

The development of dramatic art and practice from ancient times to the end of the 18th century stressing the evolution of the physical theatre and dramatic forms in relation to contemporaneous production facilities and innovations will be explored.

THEA 232 History of Theatre 2 (3-0) 3 Cr. Hrs.

Prerequisites: None.

The development of dramatic art and practice from the beginning of the 19th century to the present stressing the evolution of the physical theatre and dramatic forms in relation to contemporaneous production facilities and innovations will be explored.

THEA 241 Oral Interpretation of Literature (3-0) 3 Cr. Hrs.

Prerequisites: THEA 210 or COMA 103.

This course is designed to give students an understanding of Oral Interpretation of Literature through a two-fold technique: one, by practical experience in interpretive readings in various types of literature, and two, by the study of techniques used in the textbook. The class emphasizes the performance of literature through the use of the voice and body.

WELD 110 Introduction to Welding Basics for Fabrication (2-2) 3 Cr. Hrs.

Prerequisites: None.

This class serves as an introduction for individuals that have no welding or fabrication experience in various welding and fabrication processes. Covered in the course will be the set up and safe operation of gas welding and brazing, shielded metal arc welding, gas metal arc welding, gas tungsten arc welding, resistance welding, gas cutting and plasma cutting equipment as well as the safe set up and operation of equipment found in a welding fabrication facility.

WELD 111 Project Mathematics (2-2) 4 Cr. Hrs.

Prerequisites: None.

A mathematics course covering basic skills needed to increase the quantitative literacy of skilled welders in engineering and industrial practice. Welding related problems are designed to increase understanding of basic mathematics as they relate to linear, angular, four sided, triangular and circular measurements. Topics covered in the course also include volumetric measurement of conventional shapes as well as irregular shaped objects, weight calculation and calculations used in bending metals.

WELD 112 Contemporary Metal Sculpture 1 (1-3) 3 Cr. Hrs.

Prerequisites: WELD 110 or may be taken concurrently.

This course will explore the world of contemporary sculpture with metal. Emphasis will be on the different methods of welding, fabricating, forming metal and how these methods are applied to the principles of design in sculpture. Two critiques as well as pre-design layout will be required in the course. The required assignments will help develop fabrication techniques, conceptual thinking as well as artistic insight. This class is flexible enough to accommodate the entry-level or the advanced welder/artist.

WELD 113 Shielded Metal Arc Welding (S.M.A.W.) (2-2) 3 Cr. Hrs.

Prerequisites: None.

Theory and fundamentals of oxy/fuel cutting, welding, braze welding, shielded metal arc welding, joining and fabricating will be explored. Emphasis will be on basic welding skills, filler metals and techniques for using different welding rods. Welding machine set up and oxy/fuel welding equipment set up will be practiced extensively to insure good sound safety habits. Safety in all welding applications will be explained and students will be required to pass safety evaluations. This course will establish good sound work habits and provide a foundation for more advanced courses.

WELD 115 Gas Metal Arc Welding (G.M.A.W./M.I.G.) (2-2) 3 Cr. Hrs.

Prerequisites: None.

Theory and fundamentals of gas metal arc welding commonly referred to as M.I.G. welding will be explored. This method of fusion of metals is widely used and is the fastest growing segment of the metal working industry. Emphasis will be on basic skill development and the establishment of sound work habits. The course is designed to provide entry level employability and a solid foundation for more advanced courses.

WELD 118 Adhesive Joining Technology (1-3) 4 Cr. Hrs.

Prerequisites: WELD 113 or consent of department.

Adhesive joining technology concentrates on the design and assembly of metallic and nonmetallic materials including ceramics. Two major categories, structural and non-structural adhesive bonding, as well as adhesives selection, joint design, methods of surface preparation and joint evaluation will be compared to general mechanical joining techniques.

WELD 119 Gas Tungsten Inert Arc Welding (G.T.A.W./ T.I.G.) (2-2) 3 Cr. Hrs.

Prerequisites: None.

Theory and fundamentals of Gas Tungsten Arc Welding (G.T.A.W.) will be explored. This method of metal fusion is capable of producing very high quality welds in virtually all metals and one of the few methods of welding some of the more difficult to weld

metals. The course is designed to provide entry level employability and solid foundation for more advanced courses.

WELD 120 Advanced Processes - Stick Electrode and M.I.G. Welding (2-2) 3 Cr. Hrs.

Prerequisites: WELD 115 or consent of department.

The student will gain additional knowledge and experience in both shielded metal and gas metal arc welding. Welding will be performed in all positions; flat, horizontal, vertical and overhead. The class will introduce the student to pipe cutting and pipe welding on heavy sections. Material will be formed and fabricated using power and hand operated tools and equipment. Students will produce several required projects that will simulate weld joints found in today's modern manufacturing and construction industry.

WELD 130 Advanced Processes - Gas Tungsten (2-2) 3 Cr. Hrs.

Prerequisites: WELD 119 or consent of department.

Advanced Processes - Gas Tungsten Arc Welding moves students to a higher level of welding that the student, as an employee, may find in a job. The course will cover welding of carbon steel, stainless steel and aluminum. This course will challenge the student to perform required elements that produce welds that would meet national standards. Proper fit up of weld joints, weld bead size, weld strength and appearance will be stressed. Lay out of complex weld joints will be another requirement evaluated in an ongoing process as welded exercises are preformed.

WELD 205 Welder's Print Reading (1-1) 2 Cr. Hrs.

Prerequisites: WELD 120.

Welder's print reading provides detailed information to help welding students develop skills necessary to interpret working sketches and prints common to the welding/metalworking field. In addition, the welding student will gain knowledge in how to interpret conventional drafting symbology and specialized welding symbols and will have the opportunity to perform welds on test plates that are indicated by the welding symbols.

WELD 206 Welding Inspection and Qualification (1-1) 2 Cr. Hrs.

Prerequisites: WELD 205.

Quality welders are in demand today. It is important that these welders possess a working knowledge of weld test equipment and qualification as well as be able to test and evaluate welds. Proper use of weld test gages and equipment, dye penetrant, fluorescent dye penetrant, magnetic particle and destructive testing equipment and techniques will be covered.

WELD 208 Advanced Metal Sculpture (1-3) 4 Cr. Hrs.

Prerequisites: WELD 112.

This course is structured around the advanced artist/welder. Emphasis will be on the different methods of welding, fabricating, and forming metal and how these methods are applied to the principles of design in sculpture. Students will have the opportunity to investigate alternative metal fabrication techniques and processes.

WELD 209 Contemporary Metal Sculpture 2 (1-3) 3 Cr. Hrs.

Prerequisites: WELD 112.

This course will explore the world of Outdoor Metal Sculpture. Emphasis will be on how sculpture interacts with an outdoor space, how to install an outdoor metal sculpture and how different metals and finishes withstand the outdoor elements. Two critiques, pre-design layout and consideration of how the sculpture will be installed and viewed are required. Students will take the fabrication and sculptural design skills that they have learned from WELD 112 and apply it to make outdoor sculpture.

WELD 210 Preparation for Welder Certification in Shielded Metal Arc Welding (S.M.A.W.) (2-2) 3 Cr. Hrs.

Prerequisites: WELD 113 or extensive welding experience.

The need for "Certified Welders" continues to grow. Certification comes as a result of demonstration of competence by passing performance examinations. Although Schoolcraft College does not qualify or certify welders, the college can duplicate these tests, provide instruction in the proper welding procedure and provide the appropriate testing equipment to examine and evaluate the results. This course addresses stick electrode welding techniques and competencies.

WELD 211 Preparation for Welder Certification in Gas Metal Arc Welding (G.M.A.W./M.I.G.) (2-2) 3 Cr. Hrs.

Prerequisites: WELD 115 or extensive welding experience.

The need for "Certified Welders" continues to grow. Certification comes as a result of demonstration of competence by passing performance examinations. Although Schoolcraft College does not qualify or certify welders, the college can duplicate these tests, provide instruction in the proper welding procedure and provide the appropriate testing equipment to examine and evaluate the results. This course addresses competencies in gas metal arc welding, which is a semi-automatic wire feed welding process.

WELD 212 Preparation for Welder Certification in G.T.A.W./T.I.G. (2-2) 3 Cr. Hrs.

Prerequisites: WELD 119 or consent of department.

The need for "Certified Welders" continues to grow. Certification comes as a result of demonstration of competence by passing performance examinations. Although Schoolcraft College does not qualify or certify welders, the college can duplicate these tests, provide instruction in the proper welding procedure and provide the appropriate testing equipment to examine and evaluate the results. This course addresses competencies in Gas Tungsten Arc Welding, which is a highly precise welding process that uses an electric arc producing torch and a hand-feed filler.

WELD 214 Preparation for Welder Certification in Pipe Welding (2-2) 3 Cr. Hrs.

Prerequisites: WELD 130 or consent of department.

The need for "Certified Welders" continues to grow. Certification comes as a result of demonstration of competence by passing performance examinations. Although Schoolcraft College does not qualify or certify welders, the college can duplicate these tests, provide instruction in the proper welding procedure and provide the appropriate testing equipment to examine and evaluate the results. This course addresses competencies needed to become certified as a pipe welder. Shielded Metal Arc Welding, Gas Metal Arc Welding and Gas Tungsten Arc Welding can be used to produce these pipe welds.

WELD 223 Fabrication (2-4) 4 Cr. Hrs.

Prerequisites: WELD 120 and WELD 130 or consent of department.

Fabrication of student/instructor selected projects will be the format for this course. Emphasis will be on the development of fabrication techniques, including design, material selection, layout, material preparation and use of fixtures. Welding skills developed in WELD 120 and WELD 130 will be applied. There will be an opportunity for students to further investigate other industrial welding processes.

WELD 225 Pre-Apprenticeship Welder Certification (1-3) 3 Cr. Hrs.

Prerequisites: WELD 113 WELD 115 WELD 120.

Obtaining American Welding Society (AWS) Welder's Certification is desirable to gain acceptance into a welding-related skilled trade apprenticeship program. Each skilled trade apprenticeship requires a unique certification, for which the student must learn skills needed for specific welding procedures and processes. This course will focus on developing the skills needed to successfully pass an appropriate AWS Certified Welder performance test, along with passing a visual and destructive examination of their weldments. To receive credit in this class, students must successfully pass an AWS Certification test on a specified procedure required for their selected welding trade.

WELD 240 Computer Numerical Control (CNC) Shape Cutting and Automation (2-4) 4 Cr. Hrs.

Prerequisites: WELD 120 and WELD 205.

Introduction to the theory and application of programming and sequencing of numerical control automation and cutting equipment. Emphasis will be placed on utilizing incremental and absolute programming language applying G and M codes. Students will use computer software and nesting to create cutting paths as well as learn troubleshooting components of the automated equipment and programs. Welding skills developed in WELD 120 and WELD 205 will be applied.

WELD 262 Welding Metallurgy (1-2) 3 Cr. Hrs.

Prerequisites: MET 103.

Welding metallurgy includes the influence of alloy composition, filler materials, fluxes and thermal interactions on the structure and properties of metals. Topics covered in the course will include the chemical, mechanical, and physical properties of metals, mechanical behavior, microstructure and post-weld heat treating.

WELD 290 Welding Internship (1-12/40) 3 Cr. Hrs.

Prerequisites: Minimum of three WELD courses with a minimum average grade of 3.0 and an overall minimum GPA of 2.5 or consent of department.

This is an applied course within Occupational Programs specializing in the field of welding and fabrication (WELD) and is a cooperative assignment for students who have completed the prerequisites for this course. Employment will be approximately 12 to 40 hours per week off-campus at the employer's location within a welding and fabrication or related department. The final grade will be based on a joint evaluation by the college and the employer. Students registered in this internship course are considered Schoolcraft College students with all rights, responsibilities and privileges of a student. Internships may be paid or unpaid based upon placement. Department permission is required before registering for this course. The selection of eligible students to register for the course is a competitive process that includes testing, submission of a resume with a cover letter and interviews.

Accreditations

Schoolcraft College is accredited by The Higher Learning Commission of the North Central Association, 30 North LaSalle, Suite 2400, Chicago, IL 60602-2504; phone 800-621-7440; fax 312-263-0456 or access the Commission's website at www.ncahigherlearningcommission.org.

Schoolcraft has the following programs that have state and national approval and accreditation:

- The Children's Center is accredited by the National Association for the Education of Young Children (NAEYC). For more information regarding accreditation, call 800-424-2460.
- The criminal justice associate degree with academy program is certified by the Michigan Commission on Law Enforcement Standards (MCOLES). For more information regarding certification, call 517-322-1417.
- The culinary arts program is certified by the American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC). For more in-formation regarding certification, call 904-824-4468.
- The emergency medical technology program is approved by the Michigan Department of Community Health, Bureau of Health Policy Planning Access EMS and Trauma Systems section. For more information, call 517-241-9458.
- Fire Technology Fire Fighter 1 and 2 and the fire academy are certified by the Michigan Office of Fire Fighter Training. For more information regarding certification, call 616-447-2689.
- The health information technology associate degree program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). For more information regarding accreditation, call 312-233-1100.
- The medical assisting certificate program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) upon the recommendation of the Medical Assisting Education Review Board (MAERB). For more information regarding accreditation, call 727-210-2350.
- The associate degree and practical nursing programs are approved by the Michigan Board of Nursing and also nationally accredited by the Accreditation Commission for Education in Nursing (ACEN). For more information on MI-Board of Nursing approval and licensure, call 517-335-0918. For more information regarding the optional ACEN national accreditation, call 404-975-5000 or email info@acenursing.org.
- The massage therapy associate degree program is accredited by the National Certification Board of Therapeutic Massage and Bodywork Assigned Program. For more information regarding certification, call 800-296-0664.
- The Alternate Route to Teacher Certification Program (ARC) is approved by the Michigan Department of Education as a Michigan Alternate Route to Interim Teacher Certification (MARITC) Program. For additional information regarding the MARITC programs, call 517-335-6615.

It is the policy of Schoolcraft College that no person shall, on the basis of race, religion, color, gender, age, marital status, disability, sexual orientation, and/or national origin, be subjected to discrimination during or be excluded from participating in or be denied the benefits of any program or activity or in employment.

Any questions concerning the application of, or grievances for, Title IX of the Education Amendments of 1972, which prohibits discrimination on the basis of sex, and Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, creed, color, or national origin should be directed to:

- *Educational Programs & Activities: Dr. Cheryl M. Hagen, Vice President of Student Services and Interim Chief Academic Officer, Schoolcraft College, 18600 Haggerty Road, Livonia, MI 48152-2696, 734-462-4577 or chagen@schoolcraft.edu*
- *Employment: Laura Sensing, Executive Director of Human Resources, Schoolcraft College, 18600 Haggerty Road, Livonia, MI 48152-2696, 734-462-4405 or lsensing@schoolcraft.edu*

Any questions concerning the application of, or grievances related to, Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap, or the Americans with Disabilities Act of 1990, which requires reasonable accommodation to be provided to disabled persons, should be directed to: Dr. Glenn Cerny, Vice President and Chief Financial Officer, Schoolcraft College, 18600 Haggerty Road, Livonia, MI 48152-2696, 734-462-4416 or gcerny@schoolcraft.edu

Individuals who feel their rights have been misused in relationship to the provisions of equal opportunity at Schoolcraft College can contact the appropriate persons listed above.

Schoolcraft College Board of Trustees

The Board of Trustees serves as the policy-making body for Schoolcraft College. Established through the state legislature as part of the Community College Act, the Board of Trustees is made up of seven members, all elected by voters of the Schoolcraft Community College District. Each member serves a term of six years.

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